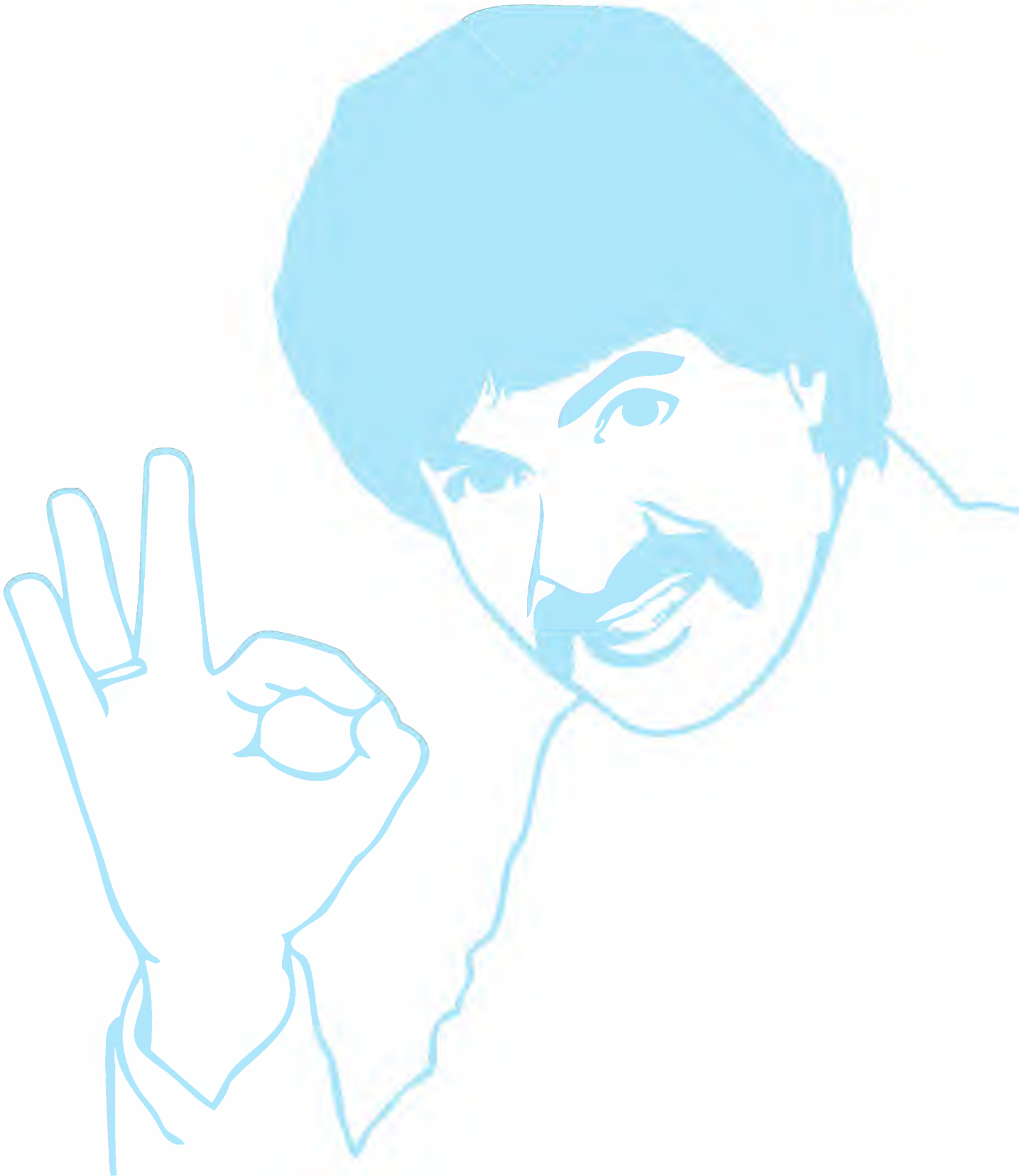
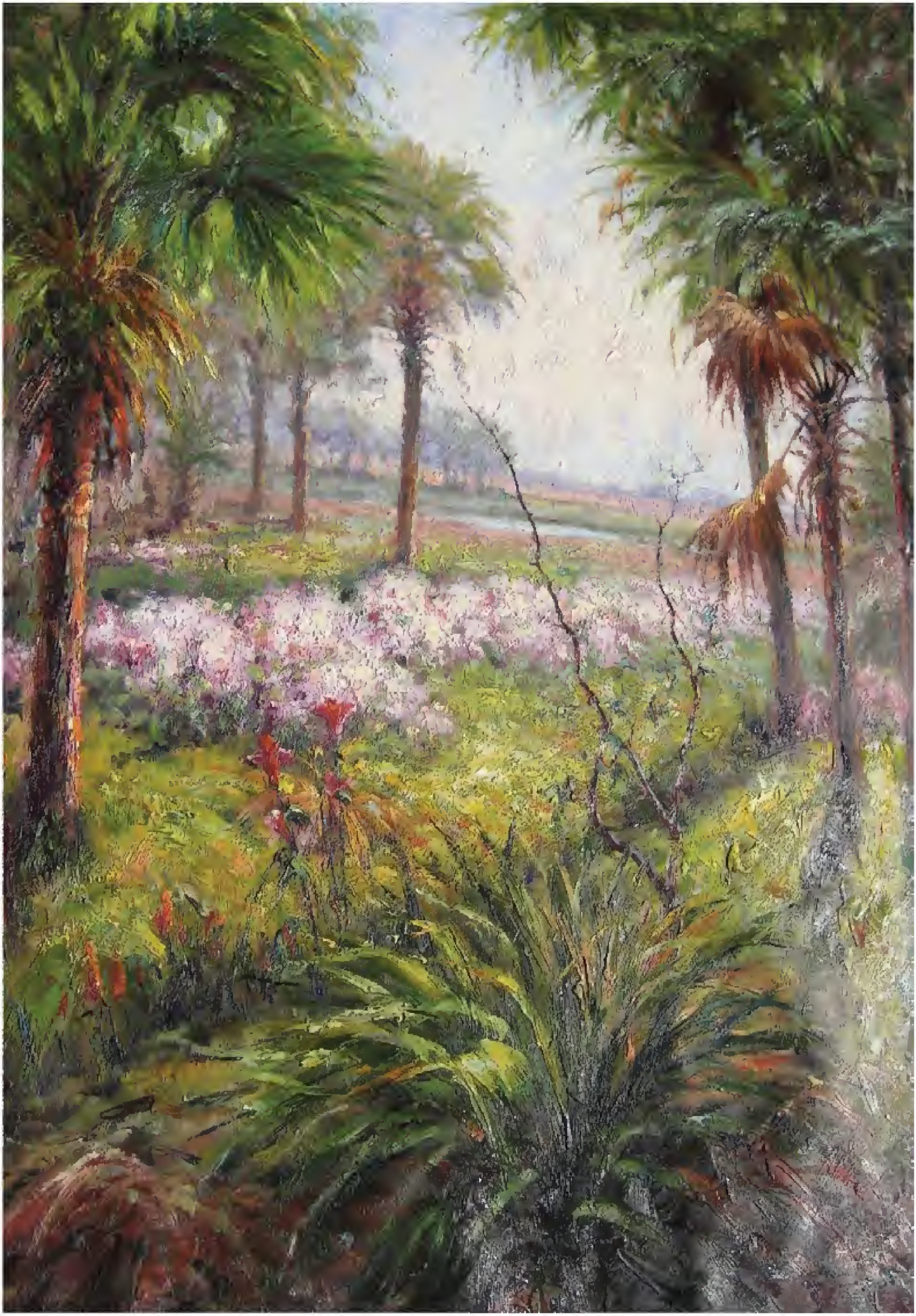
clear skies

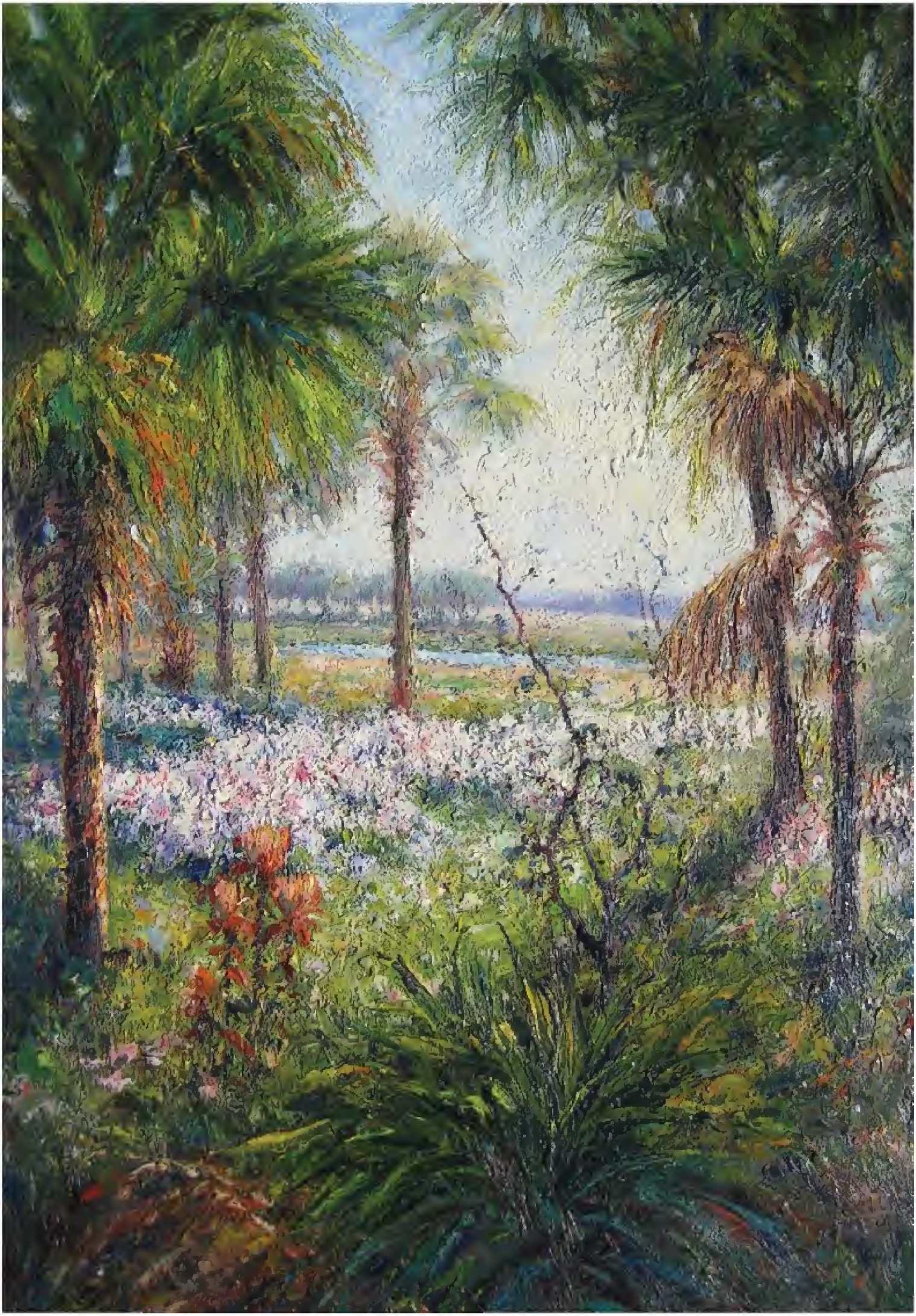
n° 2
| 2008





nocturnality and species survival

The human-induced extinction episode currently underway raises the question of which taxonomic groups are best equipped to survive it. The paleontological prism through which we interpret great biotic upheavals in Earth's past affords relatively few clues to patterns of species loss today. The fossil record indicates: (i) that species survival of mass extinctions is not random; (ii) that breadth of geographical distribution confers a survival advantage; (iii) that while species richness serves as an extinction buffer for higher taxa during periods of background extinction levels, it is a poor predictor of survival during mass extinctions (this is partly because the biological attributes that accelerate speciation rates covary with other traits that increase species' vulnerability to extinction, such as low dispersal capability and narrow environmental tolerance; and (iv) that the very same species traits conferring a survival advantage during background periods may prove lethal during mass extinctions. Ecological theory and experimentation suggest that species survival today hinges increasingly upon dispersal ability among habitat fragments in human-dominated landscapes. Arthropods are diverse, abundant, and ecologically critical and are excellent model systems for exploring the survival advantages and disadvantages associated with different species traits. We compared the responses of two close taxonomic and ecological relatives-diurnal butterflies and nocturnal moths (Lepidoptera) - to forest fragmentation and discovered a striking difference.



Materials and methods

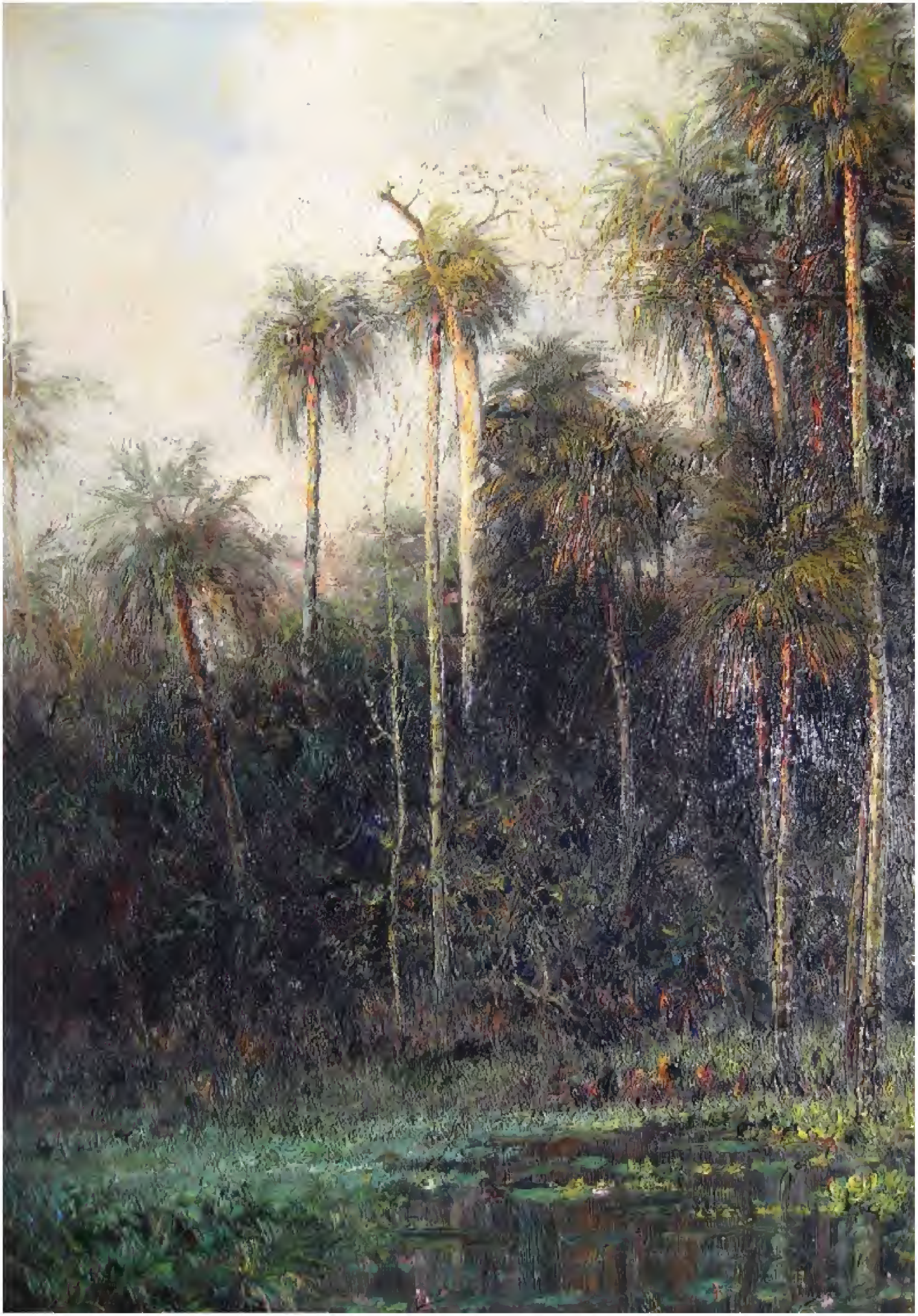
We surveyed lepidopteran diversity in eight tropical moist forest fragments, ranging from 0.3-227 hectares, near the Las Cruces Station of the Organization for Tropical Studies in southern Costa Rica. This region was continuously forested 30 years ago, but has subsequently undergone extensive forest clearance. A description of the fragments and the butterfly sampling (of species thought to be associated with forest interior) is reported elsewhere. Light traps with 10-W fluorescent tubes (350-390 nm) were used to sample moths in February and March, 1994. To control for lunar phase and weather conditions, all fragments were sampled five times in rounds of two consecutive nights. Traps were placed in the same locations as used for the butterfly sampling: within 2 m of the ground behind topographic or vegetation barriers to prevent light from reaching surrounding pasture (even though evidence suggests a light radius of attraction of <10 m) and within 50 m of forest/pasture edge to control for edge effects. In addition, a trap was operated once, for half of a standard 4-hr sampling period, in open pasture, where it was not visible from forest habitat. Finally, a second, more intensive survey of only the largest (LC) fragment was conducted. A reference collection was made of specimens >12 mm in forewing length (the diameter of the trap opening precluded the capture of individuals larger than -50 mm in forewing length), consisting of 495 morphospecies in -19 families; 2667 individuals representing these species were captured.

Results and discussion

Moth species richness (number of species) in light-trap samples was not correlated with fragment area ($r2 = 0.04$, $P > 0.45$) or distance from the largest fragment (LC), an approximate index of isolation ($r2 = 0.22$, $P > 0.10$). [The correlation between fragment area and degree of isolation ($r2 = 0.67$, $P < 0.005$) precludes testing of the relative influences of those factors on species richness.] The evenness of species abundance, reported here as J', was similar among fragments and pasture. In contrast, butterfly species richness was significantly correlated with fragment area ($r2 = 0.55$, $P < 0.025$). This correlation may be spuriously weakened by satyrine butterflies, many of which feed on grasses associated with human disturbance; their exclusion strengthened the correlation ($r2 = 0.72$, $P < 0.005$). There was weak negative correlation of butterfly species richness and distance from the LC fragment (including satyrines, $r2 = 0.26$, $P < 0.10$; excluding satyrines, $r2 = 0.40$, $P < 0.05$). Butterfly species evenness, I', is low in the small fragments, primarily due to the superabundance of certain satyrine species, and forest butterflies are almost never observed in the pastures.

Several possible explanations could account for the lack of correlation between moth and butterfly species richness ($r2 = 0.005$, $P > 0.50$). First, moths may be less host-specific than butterflies, but this appears unlikely. An extensive survey in northern Costa Rica, revealed that =50% or more of the moths had only one local host plant species and that .80% of the remainder had just a few chemically or taxonomically related hosts. Moreover, brief sampling in pasture revealed high moth species richness-certainly not supported by the pasture grasses, principally Melinis minutiflora P. Beauv. and the African import Cynodon nlemfuensis Vanderyst.

Second, vagile, generalist species may have accounted for a disproportionally large fraction of moth samples from small patches. If so, one would expect a nested subset distribution of moths among fragments, as exists for the butterflies; however, no such distribution was found. Moreover, the species richness and evenness sampled in the second, more intensive survey of LC was comparable to that sampled elsewhere in the forest-pasture habitat matrix, suggesting that the movement of moths was not strongly influenced by vegetation structure. Species richness per unit sampling effort was slightly higher throughout LC, but this is attributable in part to the placement of forest edge traps, so vegetation and topography prevented light from reaching the pasture. Trap lights at interior sites were not comparably shielded. This biased the sampling against the small patches, since the numbers of species and individuals captured were highly correlated ($r2 = 0.95$, $P << 0.001$) and appeared, in retrospect, determined by the exposure of the light trap. [At the extremes, the trap locations in LSTR were in a very deep, narrow stream bed, whereas that at TJ (in the interior of LC) was high on a slope overlooking the forest. Most spectacularly, the open pasture trap accumulated as many species as the richest fragment (LC) in one-tenth the time.] The most likely explanation for the lack of correlation between butterfly and moth species richness, however, is that, unlike butterfly movement, the movement of nocturnal moths is relatively uninhibited by forest-pasture edges. A



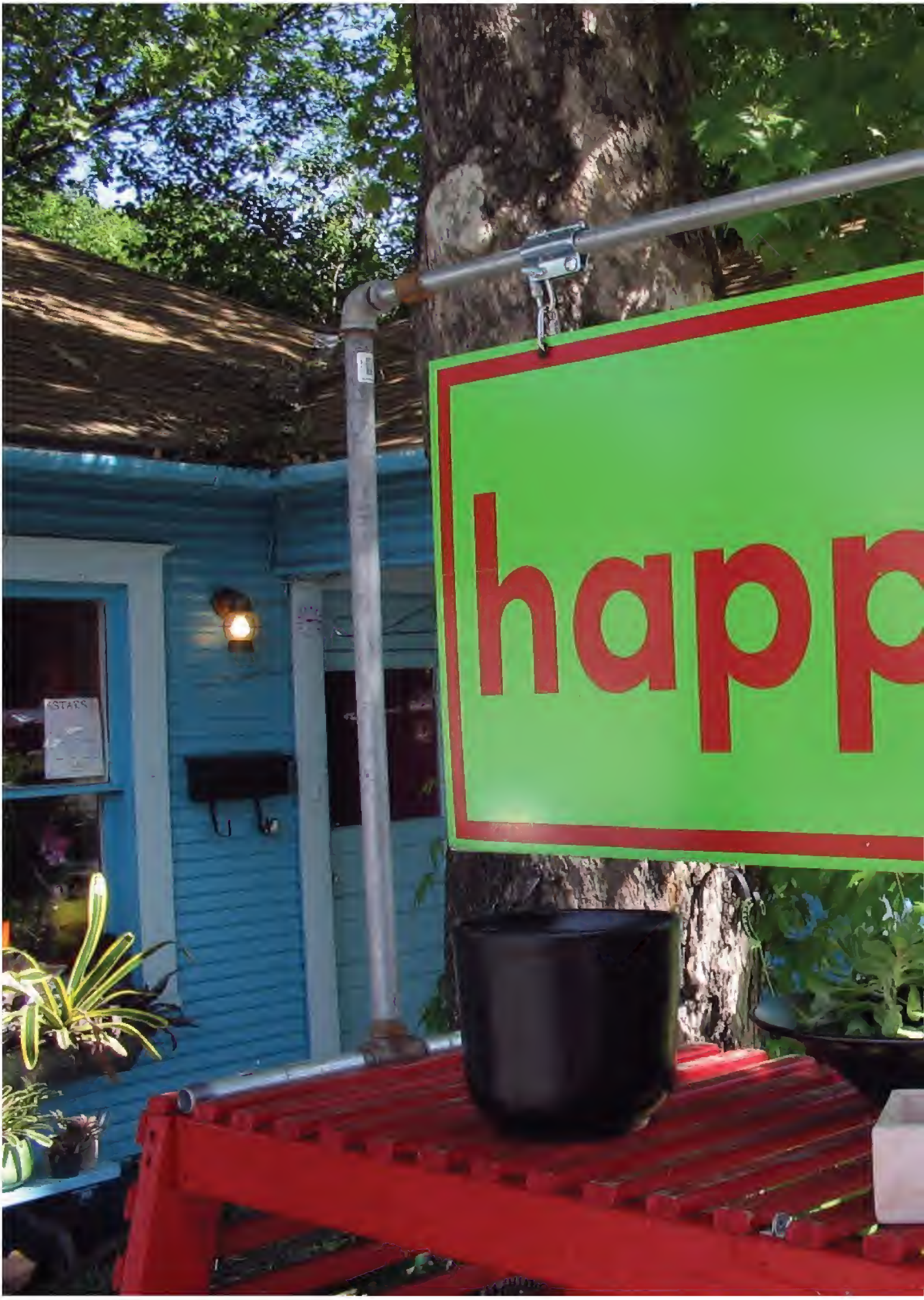
butterfly's ability to fly is primarily determined by solar radiation, whereas moths are endothermic. In both clear and overcast weather, temperature and humidity differed substantially between forest (=100 m from edge) and pasture diurnally (3.3 ± 0.9°C cooler and 12 ± 4% higher humidity in forest; n = 4 days), but little at night (0.2 ± 0.1°C warmer and 1 ± 1% higher humidity in forest; n = 3 nights); year-round data from a nearby site substantiate this. Thus, demographic units of many moth species may occupy several square kilometers of a complex matrix of forest fragments and pasture, whereas those of diurnal forest butterflies appear to be much more restricted to the fragments.

We expect that more intensive sampling would eventually reveal higher moth species richness in LC than in the smaller fragments, a trend that may be apparent in our sampling, simply because some moth species will be too sensitive to microhabitat conditions or will have insufficient vagility to cross open areas. But the absence of a nested subset of highly vagile "tramp" species makes the key point that the patterns in butterflies and moths are different; nocturnality is the prime suspect for the source of that difference. This interpretation is supported by the distribution of crepuscular butterfly species (Caligo spp., Brassolinae), found in comparable abundance in all fragments. It is also supported by the distribution of light-trapped nocturnal beetles and visually and aurally censused diurnal birds in these fragments, which correlated well with that of the moths and butterflies, respectively, but not vice versa. Further support comes from distributions of birds and bats in tropical forest fragments and cleared areas in Amazonia and Mexico. For example, of the 248 bird species censused in a region of Amazonian forest, only 18 occurred in nearby degraded pasture; by contrast, fully half of the 14 bat species captured in the forest were also encountered in pasture. A survey of bats in Mexican tropical forest fragments and agricultural areas found no relationship between bat species richness and fragment area; indeed, although agricultural sites represented only 1% of the total area surveyed (and 27% of the sites studied), they accounted for 77% of all species recorded and 38% of all bat captures.

Our findings have two important implications. First, identifying taxa to serve as biodiversity indicators may prove unexpectedly difficult. Butterflies and moths have been touted as potentially useful indicators of biodiversity, yet butterflies were poor indicators of moth diversity. Unlike nocturnal moths, however, the distribution of butterflies appears to reflect that of their larval foodplants, possibly making them conservative indicators of suitable larval moth habitat.

Second, nocturnality may enhance survival prospects by enabling organisms to more fully utilize recently fragmented landscapes, where populations of species with restricted movement would be more prone to subdivision and extinction. We hypothesize that, in this context, selection is acting indirectly upon nocturnality and directly upon vagility in fragmented landscapes. This interpretation prompts several testable predictions. First, the rate of faunal collapse in natural habitat fragments will be lower for nocturnal (and crepuscular) organisms than for diurnal organisms. Day-flying moths, for example, should undergo the same rate of collapse as butterflies. Second, one would expect the rate of faunal collapse to be lower among plant or animal species with nocturnal (versus diurnal) dispersal agents. Third, the extent to which the rates of faunal collapse differ among nocturnal and diurnal species will vary as a function of the spatial homogeneity of temperature, humidity, and solar radiation in the original, natural habitat. If the natural habitat is highly heterogeneous with respect to these conditions, one would expect organisms to have evolved means of dispersing through it or of surviving with limited dispersal. Fourth, one would expect the nocturnality advantage to be eliminated in cases where the recently converted habitat separating fragments of natural habitat has similar temperature, humidity, and solar radiation conditions, such as exotic plantation forest contiguous with native forest.

Which elements of the biota survive the current extinction episode will have profound implications for the future of humanity. The rapid loss of populations from many regions represents an opportunity to illuminate patterns of species extinction susceptibility and their consequences for ecosystem function and human well-being and perhaps to slow the decay of biodiversity in the future.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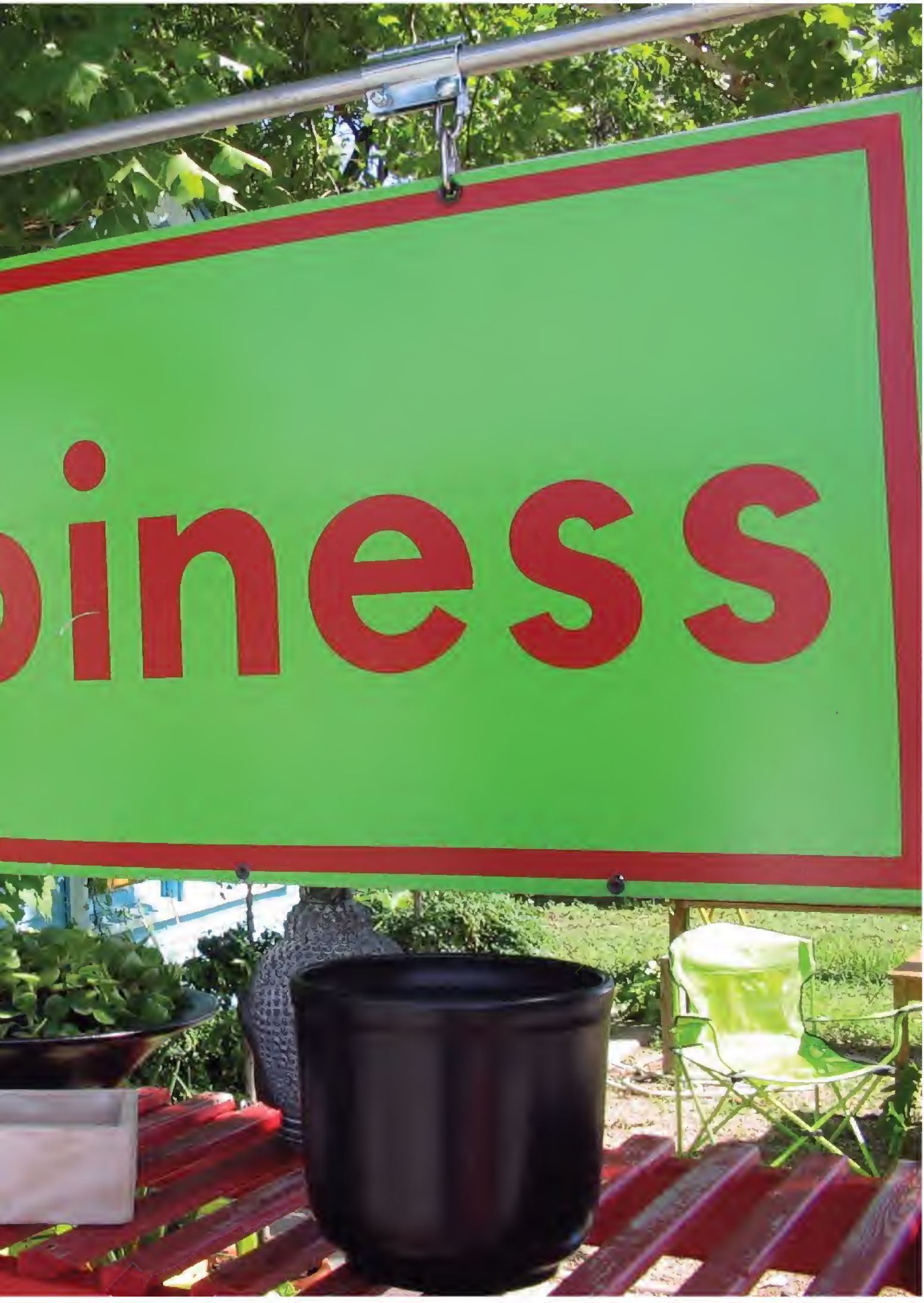
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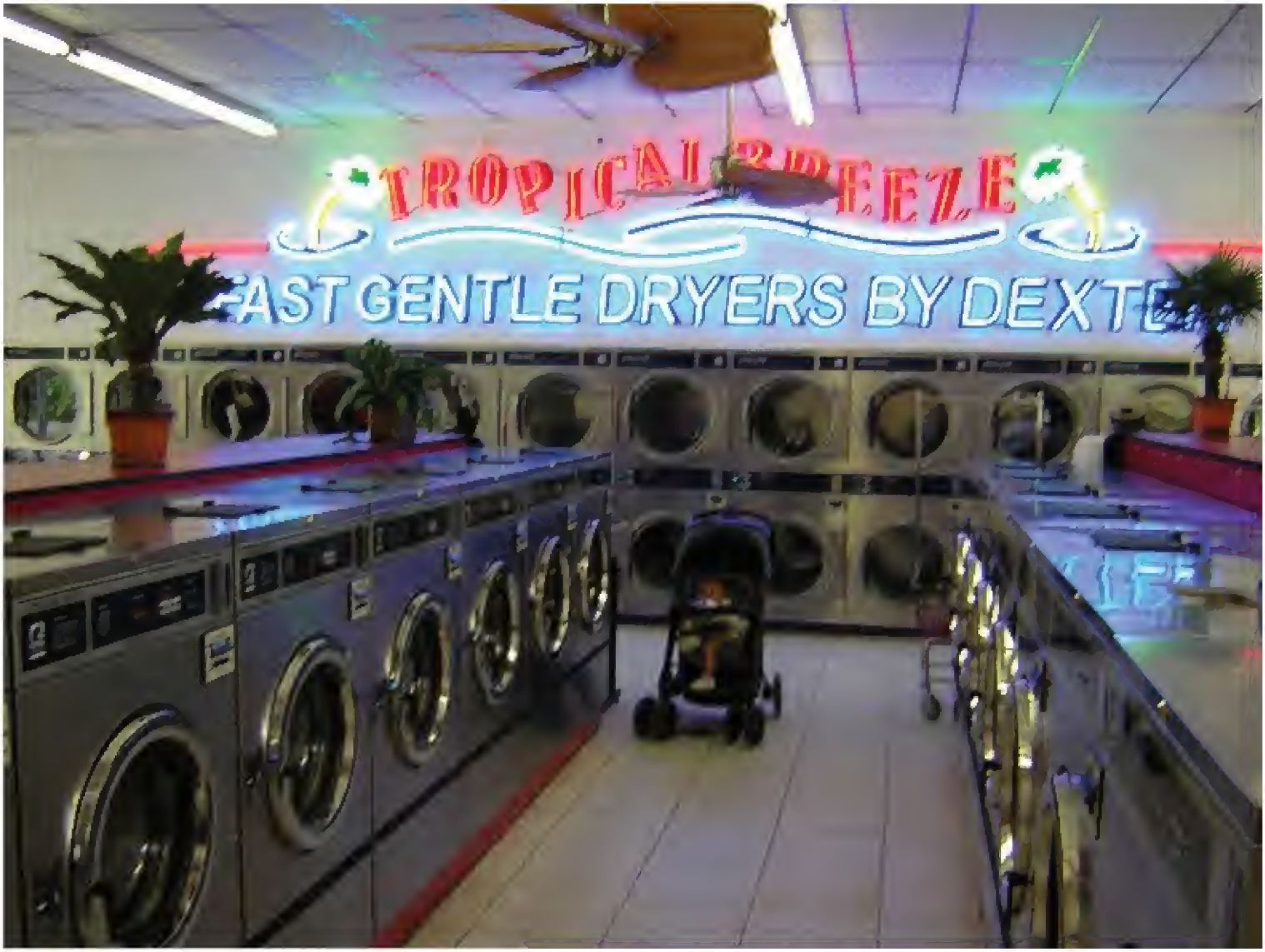
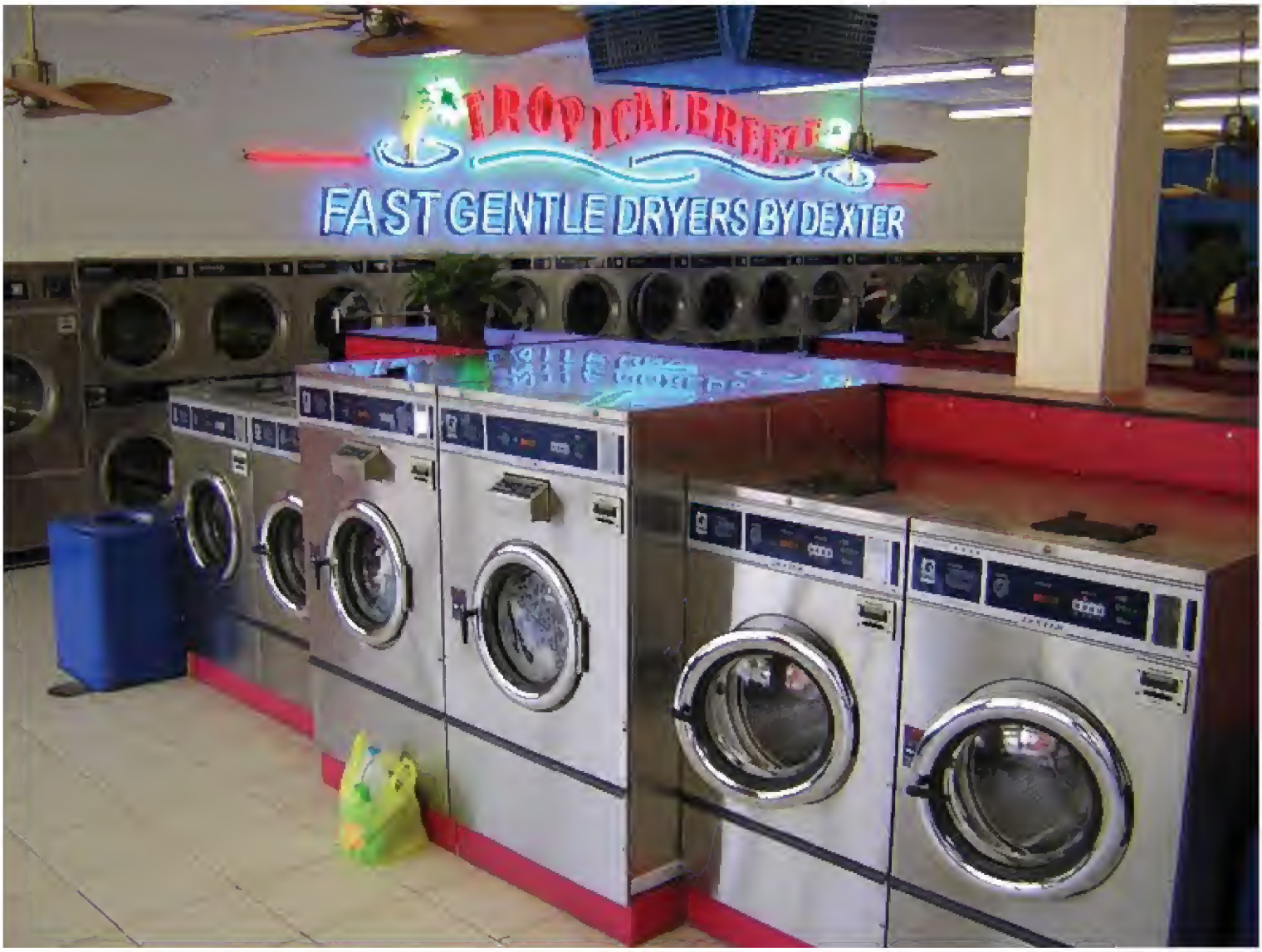


taking care of your body



Puberty causes all kinds of changes in your body. Your skin and scalp may suddenly get oily very easily. Every day it seems you have new hair growing in different places. At times, you seem to sweat for no reason — and you may notice there are odors where you never had them before. What should you do about it?

These bodily changes are a normal part of becoming an adult. Still, some of them can be a real source of anxiety. Who wants to worry about whether their underarms smell, anyway?

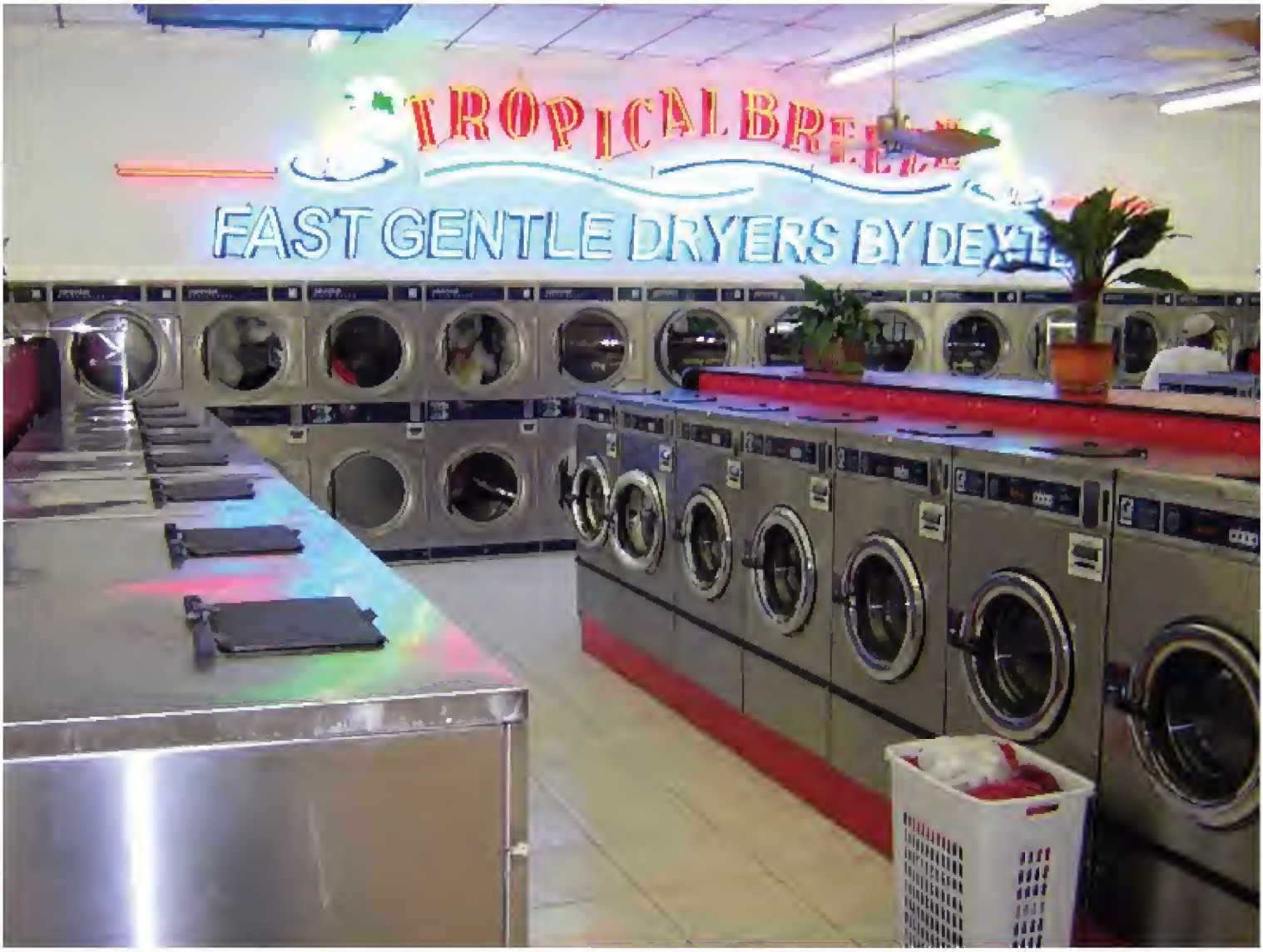
Read below for information on some hygiene basics — and learn how to deal with greasy hair, perspiration, and body hair.

Oily Hair

The hormones that create acne are the same ones that can make you feel like you're suddenly styling your hair with a comb dipped in motor oil. Each strand of hair has its own sebaceous (oil) gland, which keeps the hair shiny and waterproof. But during puberty, when the sebaceous glands produce extra oil, it can make your hair look too shiny, oily, and greasy.

Washing your hair every day or every other day can help control oily hair. Dozens of shampoos are available in drugstores and supermarkets for you to choose from — most brands are pretty similar, although you might want to try one that is specially formulated for oily hair. Use warm water and a small amount of shampoo to work up a lather. Don't scrub or rub too hard — this doesn't get rid of oil any better and can irritate your scalp or damage your hair. After you've rinsed, you can follow up with a conditioner if you like; again, one for oily hair might work best.

When you're styling your hair, pay close attention to the products you use. Some styling gels or lotions can add extra grease to your hair, which defeats the purpose of washing it in the first place! Look for formulas that say "greaseless" or "oil free."



Sweat and Body Odor

Perspiration, or sweat, comes from sweat glands that you've always had in your body. But thanks to puberty, these glands not only become more active than before, they also begin to secrete different chemicals into the sweat that has a stronger smelling odor. You might notice this odor under your arms in your armpits. Your feet and genitals might also have new smells.

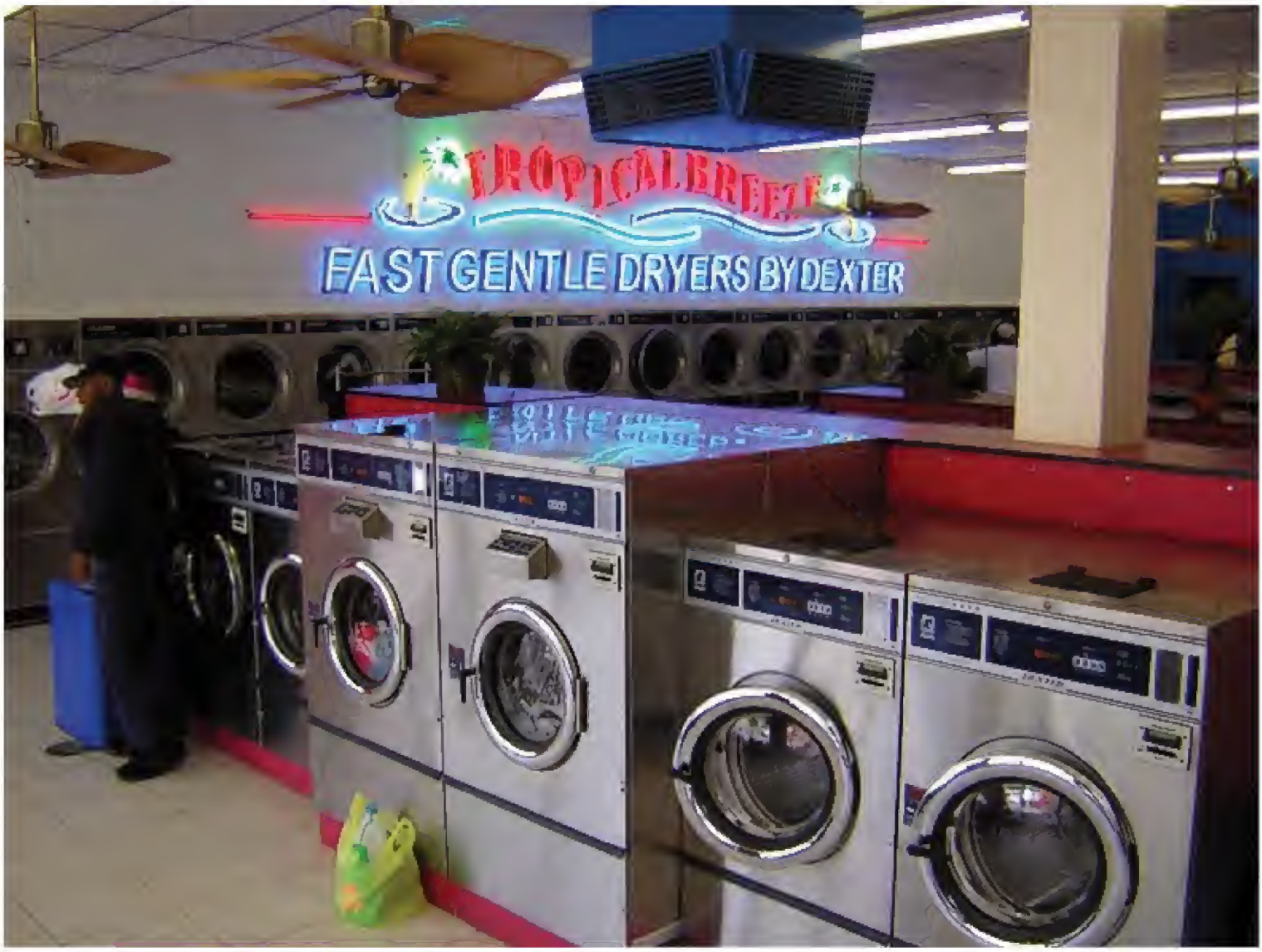
The best way to keep clean is to bathe or shower every day using a mild soap and warm water. This will help wash away any bacteria that contribute to the smells. Wearing clean clothes, socks, and underwear each day can also help you to feel clean. If you sweat a lot, you might find that shirts, T-shirts, socks, and underwear made from cotton or other natural materials will help absorb sweat more effectively.

If you're concerned about the way your underarms smell, you can try using a deodorant or deodorant with antiperspirant. Deodorants get rid of the odor of sweat by covering it up, and antiperspirants actually stop or dry up perspiration. They come in sticks, roll-ons, gels, sprays, and creams and are available at any drugstore or supermarket. All brands are similar (and ones that say they're made for a man or for a woman are similar, too, except for some perfumes that are added).

If you choose to use deodorant or antiperspirant, be sure to read the directions. Some work better if you use them at night, whereas others recommend that you put them on in the morning. But keep in mind that some teens don't need deodorants or antiperspirants. So why use them if you don't have to? Deodorant and antiperspirant commercials may try to convince you that you'll have no friends or dates if you don't use their product, but if you don't think you smell and you take daily baths or showers and wear clean clothes, you may be fine without them.

Body Hair

Body hair in new places is something you can count on — again, it's hormones in action. You may want to start shaving some places where body hair grows, but whether you do is up to you. Some guys who grow facial hair like to let it develop into a mustache and beard. Some girls may decide to leave the hair on their legs and under their arms as is. It's all up to you and what you feel comfortable with.



If you do decide to shave, whether you're a guy or girl, you have a few different choices. You can use a traditional razor with a shaving cream or gel or you can use an electric razor. If you use a regular razor, make sure the blade is new and sharp to prevent cuts and nicks. Shaving cream and gel are often a better bet than soap because they make it easier to pull the razor against your skin. Some of the newer razors contain shaving gel right in the blade area, making even beginners feel comfortable shaving.

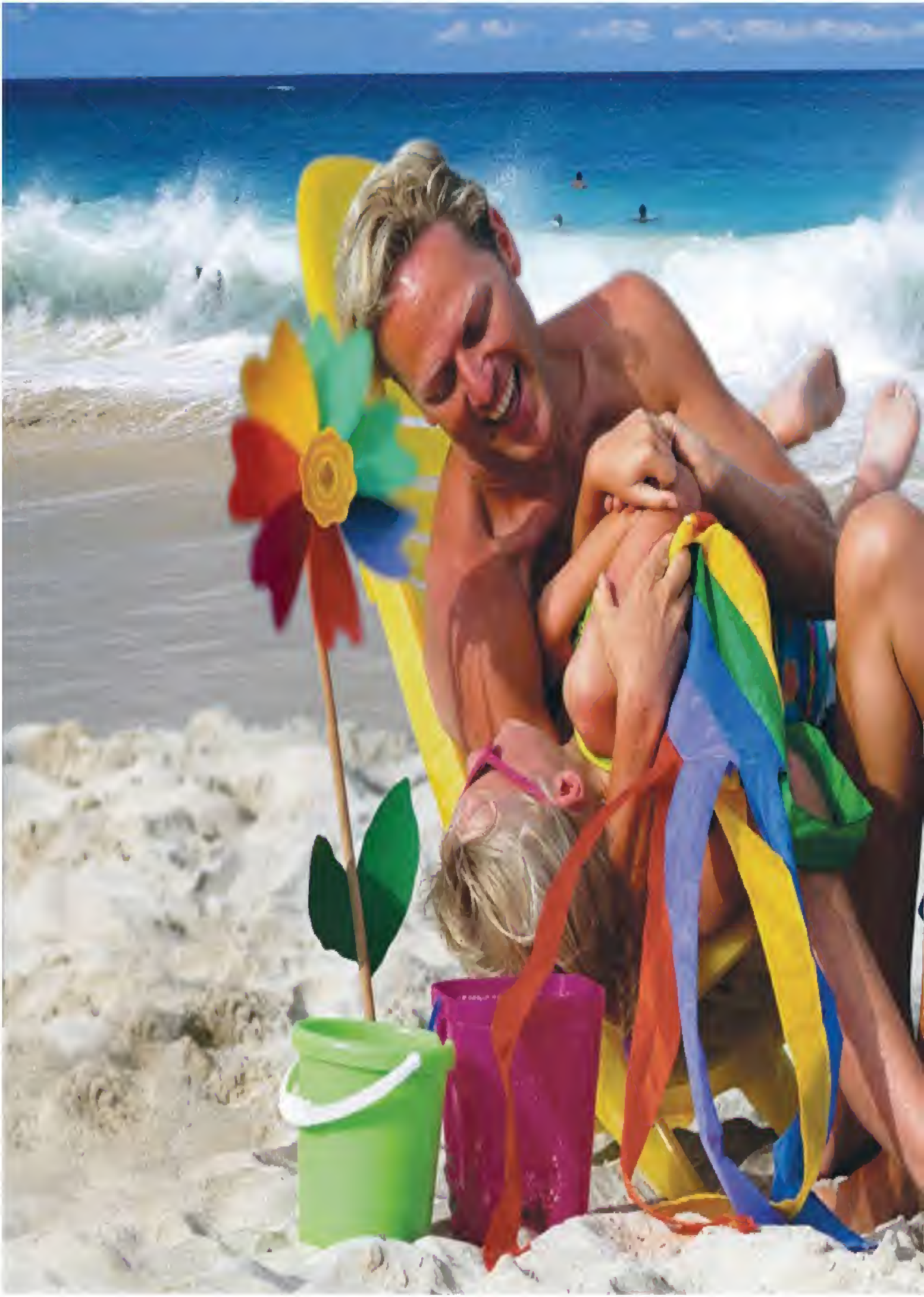
Whether you're shaving your legs, armpits, or face, go slowly. These are tricky areas of your body with lots of curves and angles, and it's easy to cut yourself if you move too fast. An adult or older sibling can be a big help when you're learning to shave. Don't be afraid to ask for tips.

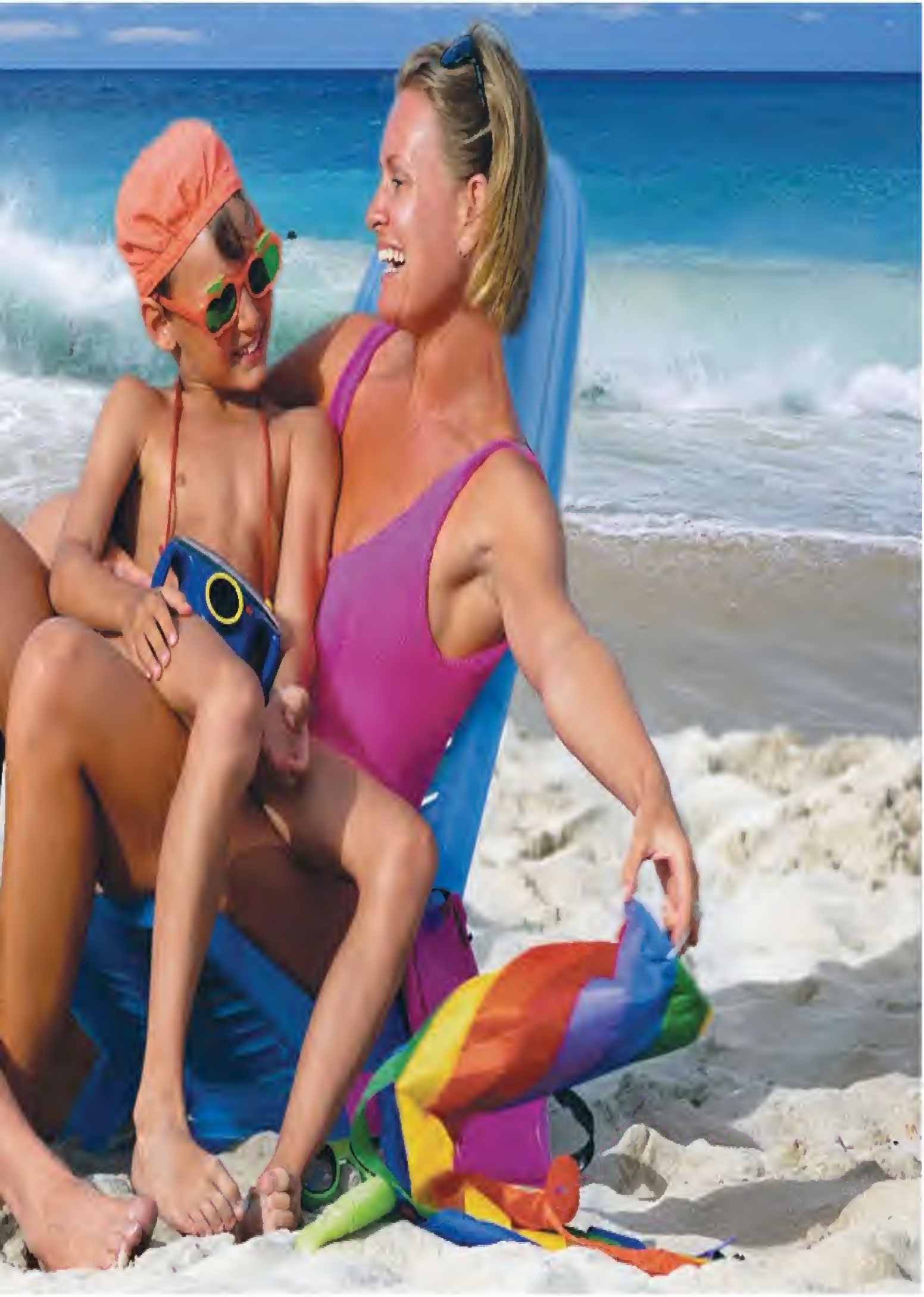
You might want to avoid shaving your pubic hair because when it grows back in, the skin may be irritated and itchy. Also, guys may think twice about shaving their chests, and girls should avoid shaving their faces because the stubble that grows back will look prickly and thicker, forcing you to shave over and over.

If you're a girl and you're worried about hairs on your upper lip, step back from the mirror and you may see that the hair everyone really sees is probably not as bad as you think.

If you do decide you want to get rid of unwanted facial hair, research the options and ask an adult or older sibling for advice. Many products are made for facial hair — everything from bleach that lessens its appearance to hair removers that are specially made for hair on the face. And some new oil-free facial moisturizers on the market contain substances to make facial hair softer and less visible. You may want to try one before you opt for bleaching or hair removal.

In the rare case where a girl's facial hair growth is enough to cause anxiety, a dermatologist or skin specialist can use permanent removal techniques such as electrolysis. In some cases, excess hair growth in girls can be a sign of a medical condition, like polycystic ovary syndrome. If you're a girl who is worried about hair growth, talk to your doctor.





hearing your own voices

A minute ago your voice sounded normal. You could talk and laugh with no worries. But now when you open your mouth, it's a completely different story. The noise coming from your throat kind of sounds like you, but it's croaking, squeaking, honking, and peeping. You can barely get through a sentence without your voice sounding like it's out of control: high one minute, low the next, then high again. You don't have a cold or a sore throat. In fact, everything feels normal — but nothing sounds right.

Your voice is changing! It's one of the many developments that happen to both girls and guys when they reach puberty. A guy's voice gets way deeper than a girl's, though.

What Causes My Voice to Change?

At puberty, guys' bodies begin producing a lot of the hormone testosterone (pronounced: tes-tass-tuh-rone), which causes changes in several parts of the body, including the voice. For starters, a guy's larynx (pronounced: lar-inks), also known as the voice box, grows bigger. The larynx, which is located in the throat at the top of the trachea (pronounced: tray-kee-ah) or windpipe, is like a hollow tube about 2 inches (5 centimeters) high. The larynx is responsible for creating the sound of your voice.

Stretched across your larynx are two muscles, your vocal cords, which are kind of like rubber bands. When you breathe, your vocal cords relax against the walls of the larynx and completely open to allow air to get in and out of your lungs. When you speak, though, your vocal cords close together by stretching across the larynx. Air from your lungs is then forced out between your vocal cords, causing them to vibrate and produce the tone of your voice. When you lower your voice, your vocal cords are lengthened and relaxed. When you make your voice higher, your vocal cords become shortened and tightened. (You can notice this difference in how they feel as you adjust your speech.)


Celtia Samaroo Jammin with FAM
Tropics Nightclub, Hollywood FL.

As your larynx grows, your vocal cords grow longer and thicker. Also, your facial bones begin to grow. Cavities in the sinuses, the nose, and the back of the throat grow bigger, creating more space in the face that gives your voice more room to echo. All of these factors cause your voice to get deeper.

Think of a guitar. When a thin string is plucked, it vibrates and produces a high-sounding tone. When a thicker string is plucked, it sounds much deeper when it vibrates. That's kind of what happens to your voice. Before your growth spurt, your larynx is relatively small and your vocal cords are relatively thin. So your voice is high and kid-like. But as bones, cartilage, and vocal cords grow, your voice starts to sound like an adult's.

Along with all the other changes in your body, you might notice that your throat area looks a little different. For guys, when the larynx grows bigger, it tilts to a different angle inside the neck. Part of it sticks out in the part of the neck at the front of the throat and forms the Adam's apple. For girls, the larynx also grows bigger but not as much as a guy's. That's why girls don't have Adam's apples.

Why Is My Voice So Hard to Control?

While your body is getting used to these changes, your voice can be difficult to control. A guy's voice "cracks" or "breaks" because his body is getting used to the changing size of his larynx. Fortunately, the cracking and breaking is only temporary. It usually lasts no longer than a few months. And even during that time, your voice won't crack every time you speak.

Some guys' voices might drop gradually, whereas others' might drop quickly. You may feel concerned, stressed, or embarrassed about the sound of your voice, but people usually understand — especially friends or brothers who've gone through it, too. Everyone goes through it, and once it happens, it takes a while to adjust to your larger larynx and the new sound of your voice.

When Will My Voice Change?

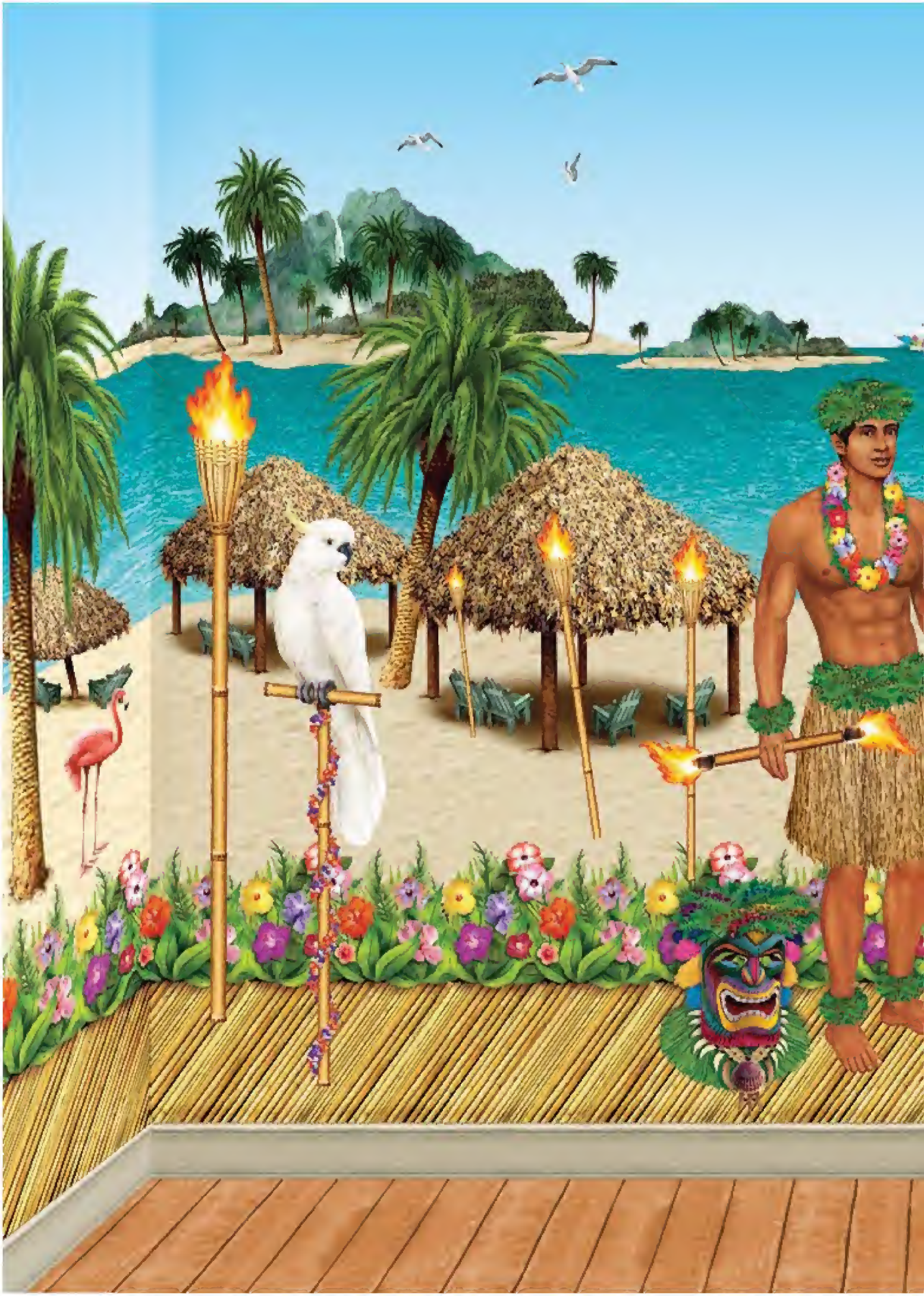
You may have noticed that some of your friends have cracking and breaking voices, some might already have deep voices, and some still have the same voice they've always had. Everyone's timetable is different, so some voices might start to change earlier and some might start a little later. Generally, a guy's voice will start to change somewhere between the ages of 11 and 15 — although it can be earlier or later for some people. It all depends on when a guy goes through puberty, and some normal guys enter puberty earlier or later than others.

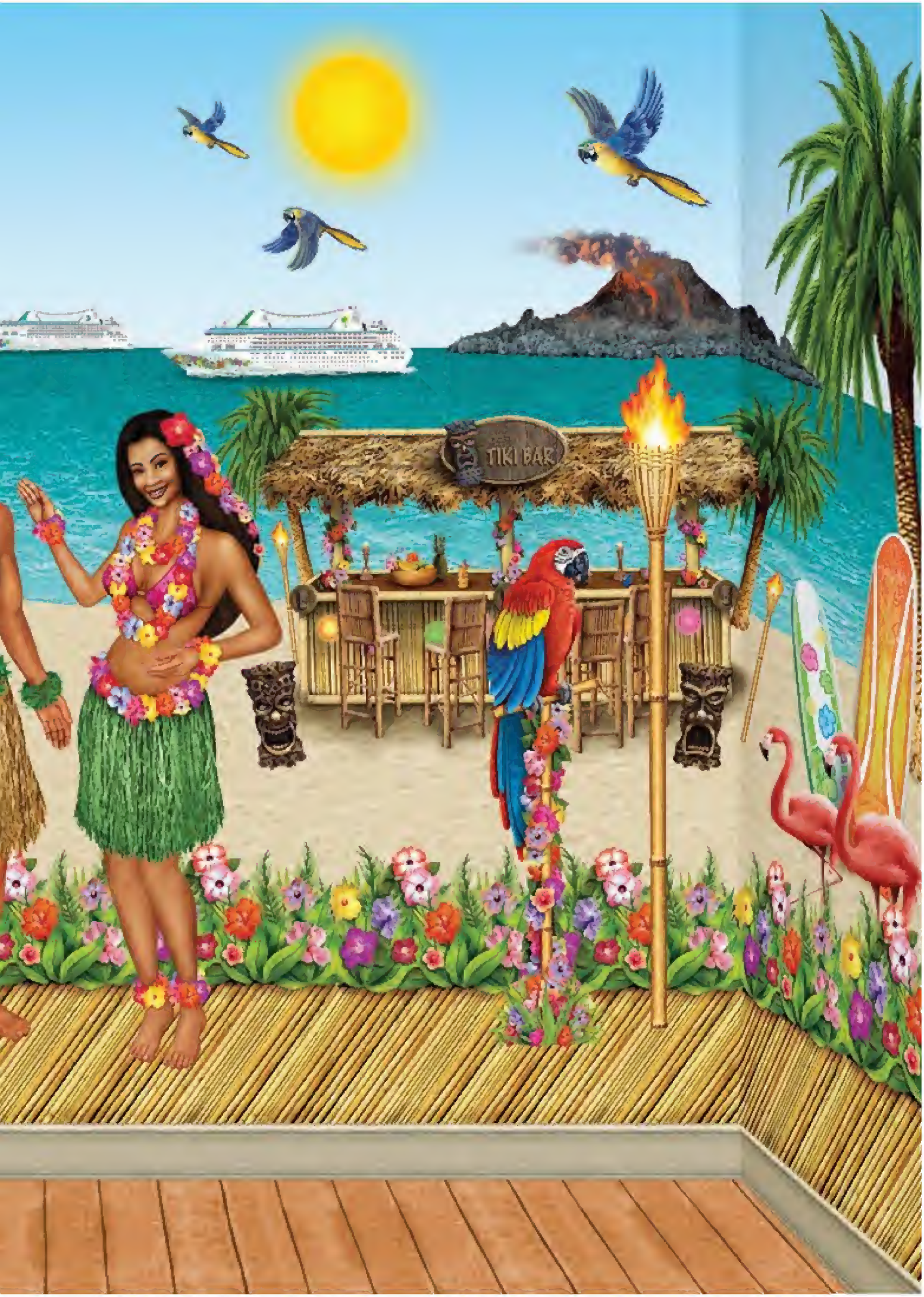
How Deep Will My Voice Get?

How deep a guy's voice gets depends on his genes: The larger a guy's larynx, the thicker the vocal cords, and the bigger the resonating area, the deeper his voice will be.

Once your larynx has grown, your voice will be more stable and easier to control. But even then your voice hasn't finished developing! Even after the quick change that happens in your teens, your voice continues to develop. Although the squeaking and cracking stage doesn't last long, most guys' voices don't fully mature until they're in their twenties.


Ceilia All Over!!!
Florida Melody Makers

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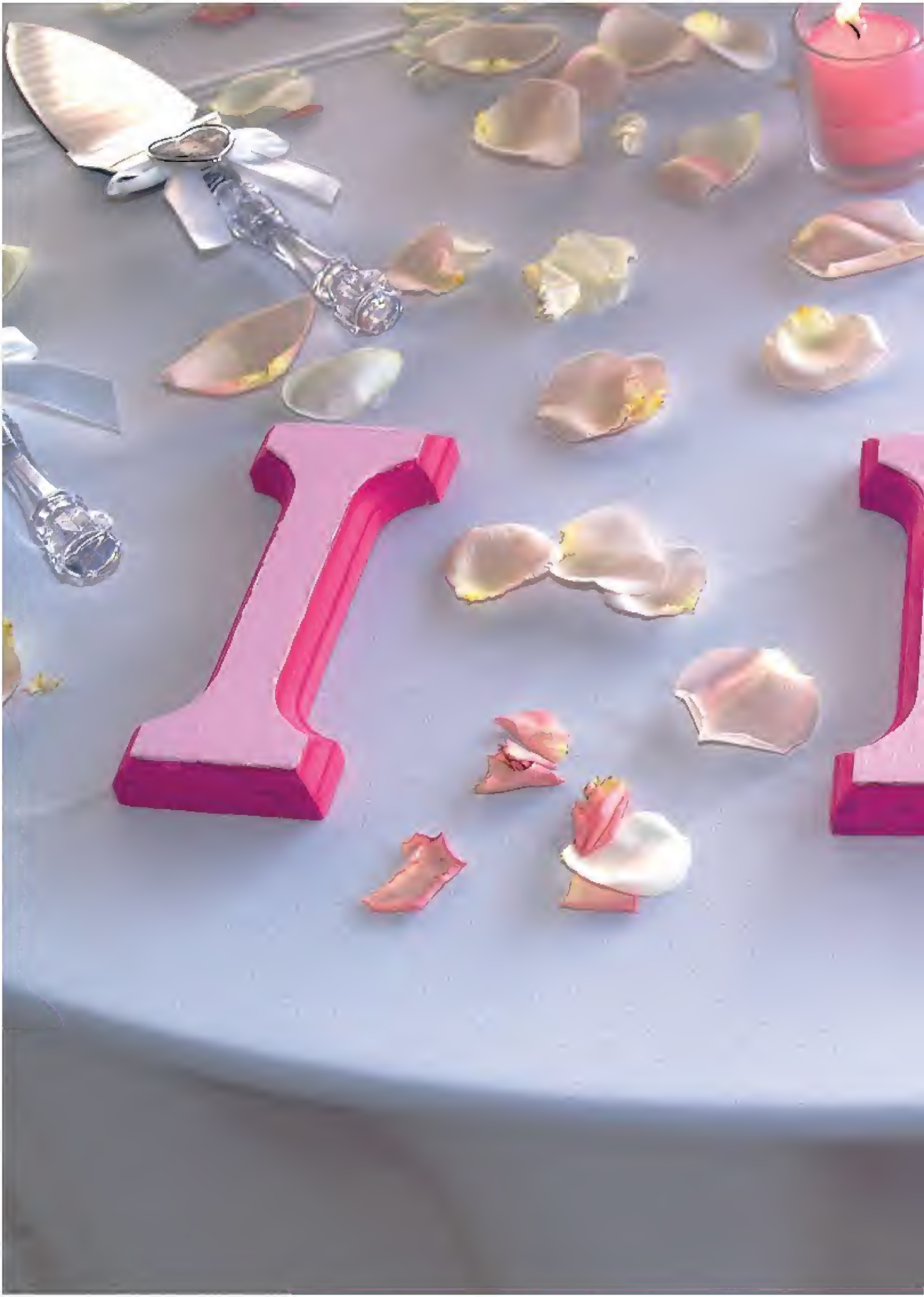



DO

home

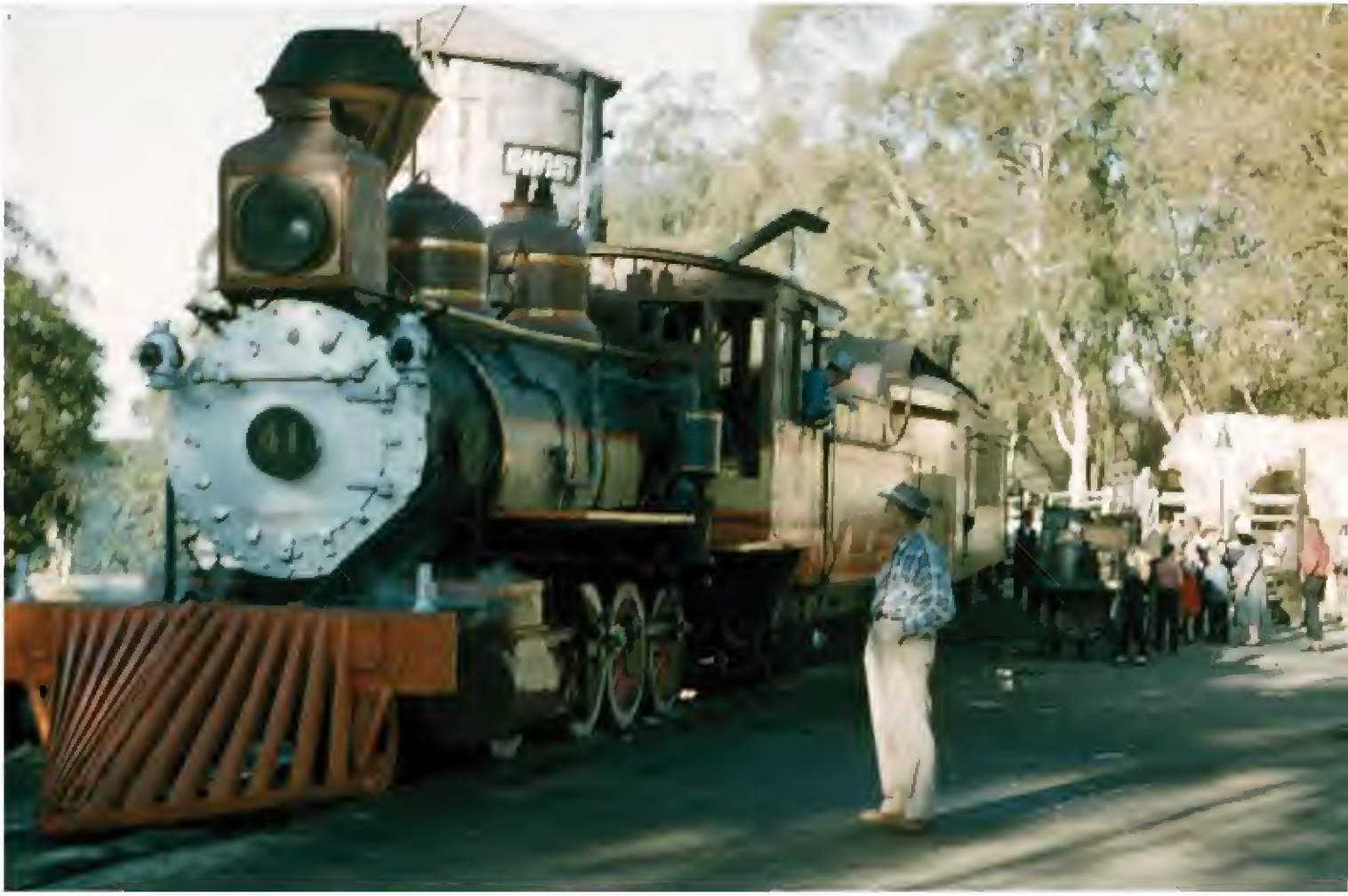
Anthony is already in bed when he hears the front door slam. He covers his head with his pillow to drown out the predictable sounds of his parents arguing. Anthony is all too aware that his father has been drinking again and his mother is angry. Many teens like Anthony live with a parent who is an alcoholic, a person physically and emotionally addicted to alcohol. Alcoholism has been around for centuries, yet no one has discovered an easy way to prevent or stop it. Alcoholism continues to cause anguish not only for the person who drinks, but for everyone who is involved with that person. According to the National Council on Alcoholism and Drug Dependence (NCADD), there are nearly 14 million Americans who are considered problem drinkers (including 8 million who have alcoholism) and 76 million people who are exposed to alcoholism in family settings. Although these rates show a huge number of problem drinkers, they also show that people who live with alcoholic family members are not alone.

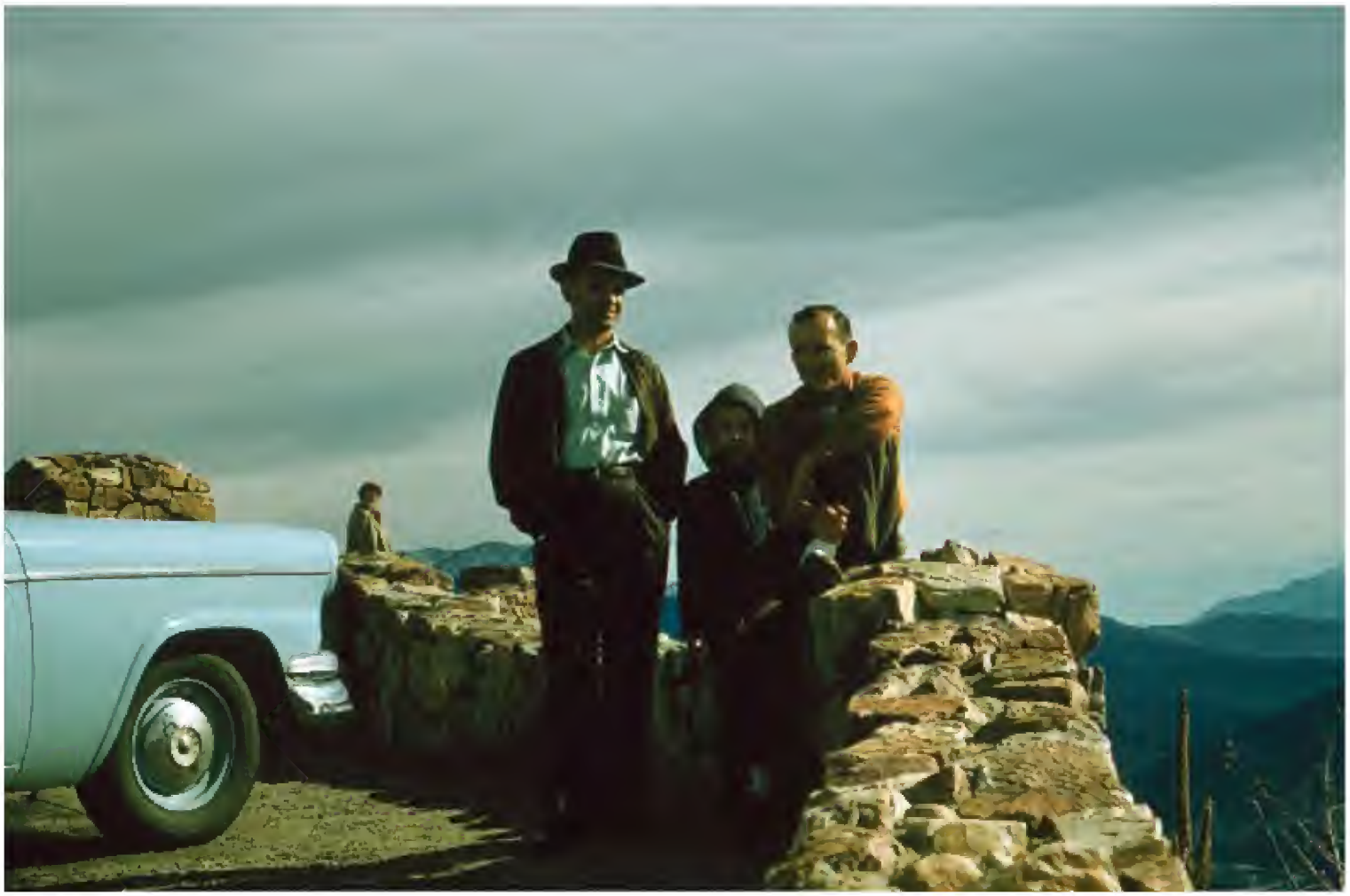
Why Does My Parent Drink?

Alcoholism is a disease. Like any disease, it needs to be treated. Without professional help, an alcoholic will probably continue to drink and may even become worse over time. Just like any other disease, alcoholism is no one's fault. Some people who live with alcoholics blame themselves for their loved one's drinking. But the truth is, because of their disease, alcoholics would drink anyway. If your parent drinks, it won't change anything if you do better in school, help more around the house, or do any of the other things you may believe your parent wants you to do. Other people may tell themselves that their parents drink because of some other problem, such as having a rough time at work or being out of work altogether. Parents may be having marital problems, financial problems, or someone may be sick. But even if an alcoholic parent has other problems, nothing you can do will make things better. The person with the drinking problem has to take charge of it. No one else can help an alcoholic get well.

Why Won't My Parent Stop Drinking?

Denial can play a big role in an alcoholic's life. A person in denial is one who refuses to believe the truth about a situation. A problem drinker may blame another person for the drinking because it is easier than taking responsibility for it. Some alcoholic parents make their kids feel bad by saying things like, "You're driving me crazy!" or "I can't take this anymore." An alcoholic parent may become enraged at the slightest suggestion that drinking is a problem. Those who acknowledge their drinking may show their denial by saying, "I can stop anytime I want to," "Everyone drinks to unwind sometimes," or "My drinking is not a problem."





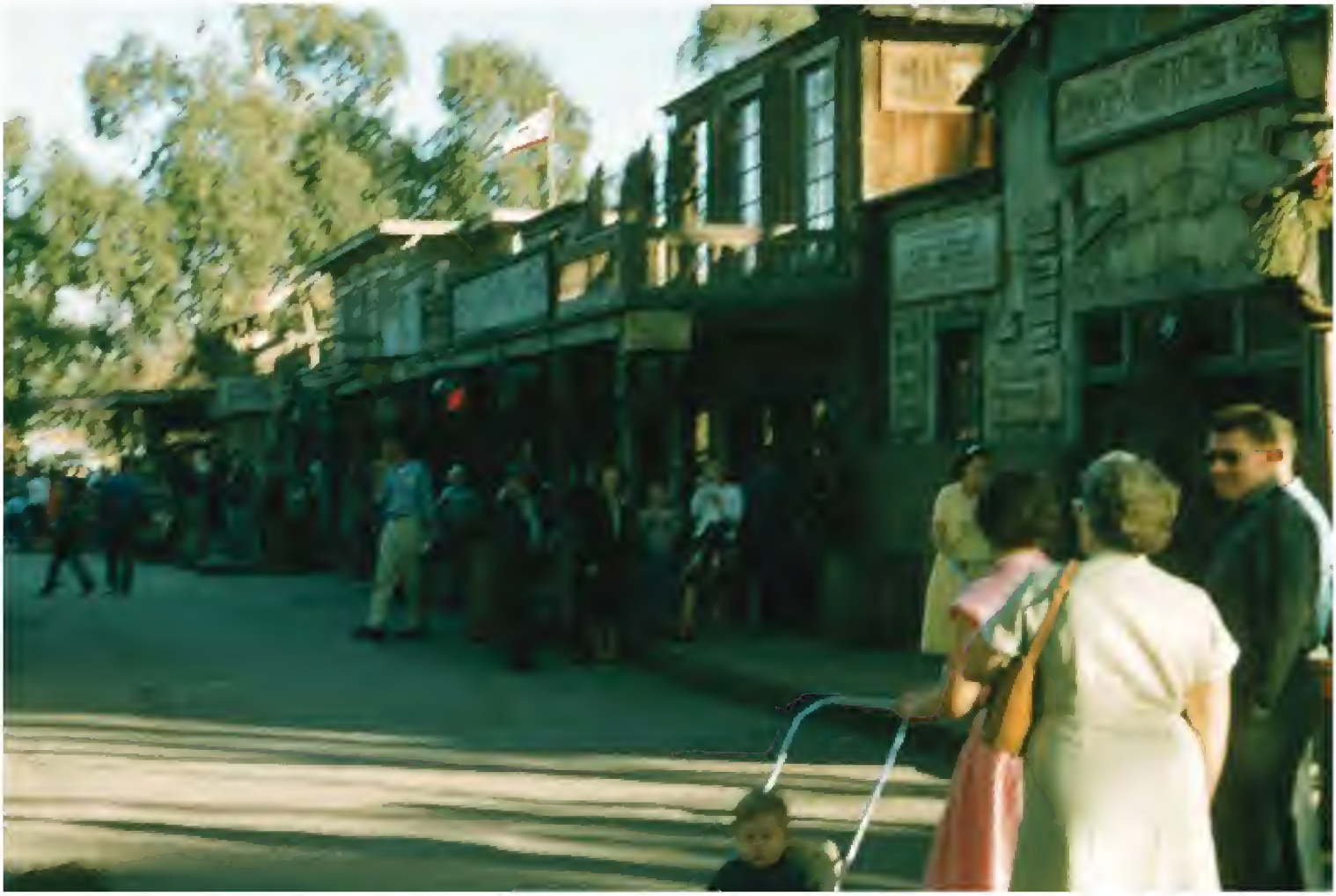
Why Do I Feel So Bad?

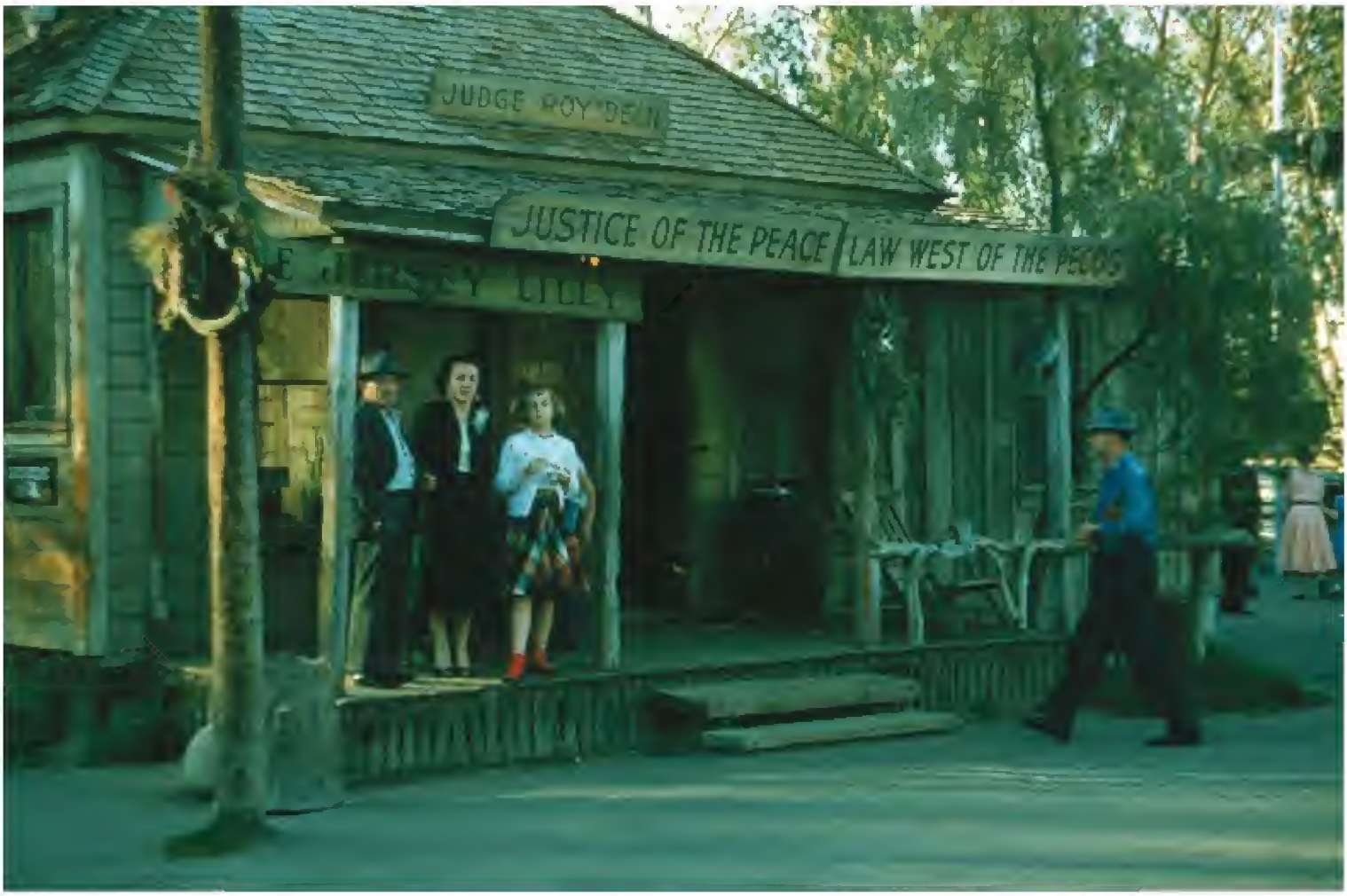
If you're like most teens, your life is probably filled with emotional ups and downs, regardless of what's happening at home. Add a parent with a drinking problem to this tumultuous time and a person's bound to feel overwhelmed. Teens with alcoholic parents might feel anger, sadness, embarrassment, loneliness, helplessness, and a lack of self-esteem. These emotions can be triggered by the added burdens of living with an alcoholic parent. For example, many alcoholics behave unpredictably, and kids who grow up around them may spend a lot of energy trying to feel out a parent's mood or guess what he or she wants. One day you might walk on eggshells to avoid an outburst because the dishes aren't done or the lawn isn't mowed; the next day, you may find yourself comforting a parent who promises that things will be better. There may be problems paying the bills, having your mom or dad show up for important events, and you may even have to take care of younger siblings, too. The pressure to manage these situations in addition to your own life — and maybe take care of younger siblings, too — can leave you exhausted and drained. Although alcoholism causes similar patterns of damage to many families, each situation is unique. Some parents with alcohol problems might abuse their children emotionally or physically. Others neglect their kids by not providing sufficient care and guidance. Parents with alcohol problems may also use other drugs. Your family may have money troubles. Although each family is different, teens with alcoholic parents almost always report feeling alone, unloved, depressed, or burdened by the secret life they lead at home. Because it's not possible to control the behavior of an alcoholic, what can a person do to feel better?

What Can I Do?

Teenage children of alcoholics are at a higher risk of becoming alcoholics themselves. Acknowledging the problem and reaching out for support can help ensure that your future does not repeat your parent's past.

Acknowledge the problem. An parent who is a problem drinker is never your fault. Many kids of alcoholics try to hide the problem or find themselves telling lies to cover up for a parent's drinking. Admitting that your parent has a problem — even if he or she won't — is the first step in taking control. Being aware of how your parent's drinking affects you can help put things in perspective. For example, some teens who live with alcoholic adults become afraid to speak out or show any normal anger or emotion because they worry it may trigger a parent's drinking binge. Clearly, hiding your feelings can create its own set of problems. Acknowledging feelings of anger or resentment — even if it's just to yourself or a close friend — can help protect against this. Recognizing the emotions

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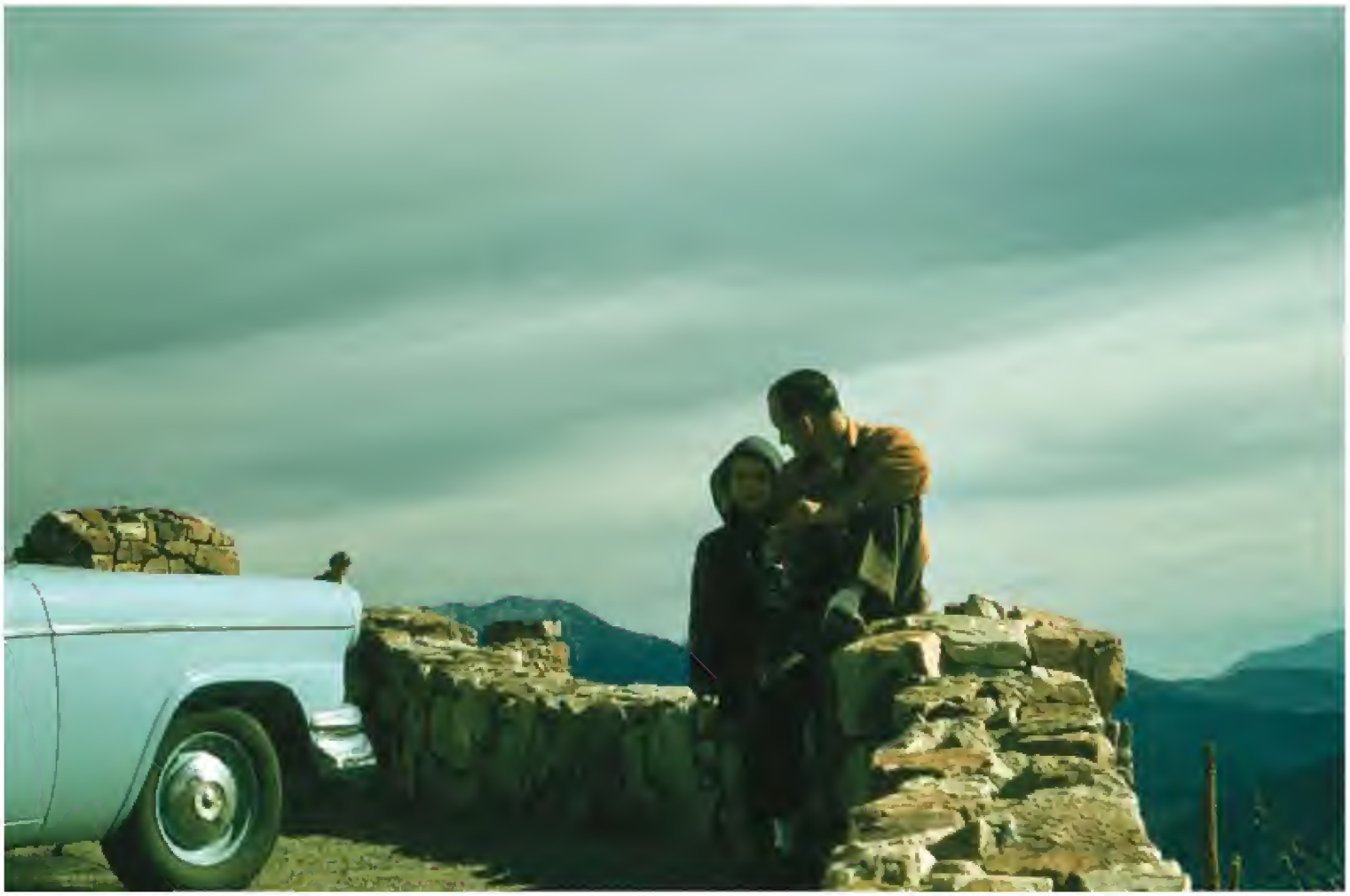
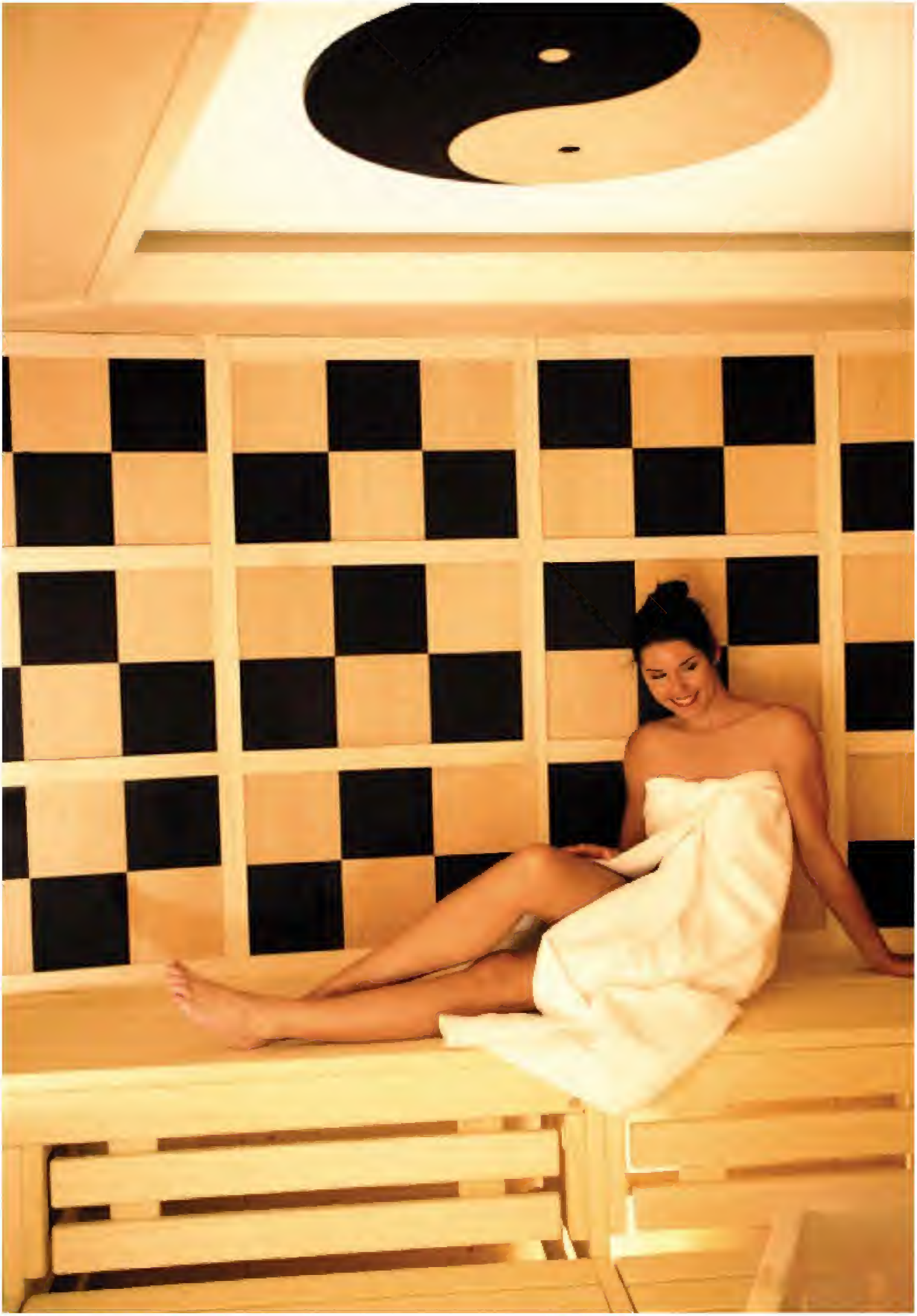
that go with the problem also can help you from burying your feelings and pretending that everything's OK. Likewise, realizing that you are not the cause of a parent's drinking problem can help you feel better about yourself.

Find support. It's good to share your feelings with a friend, but it's equally important to talk to an adult you trust. A school counselor, favorite teacher, or coach may be able to help. Some teens turn to their school D.A.R.E. (Drug and Alcohol Resistance Education) officer, whereas others find a sympathetic uncle or aunt. Because alcoholism is such a widespread problem, several organizations offer confidential support groups and meetings for people living with alcoholics. Al-Anon, an organization designed to help the families and friends of alcoholics, has a group called Alateen that is specifically geared to young people living with adults who have drinking problems. Alateen is not only for children of alcoholics, it can also help teens whose parents may already be in recovery. The group Alcoholics Anonymous (AA) also offers a variety of programs and resources for people living with alcoholics. You're not betraying your parent by seeking help. Keeping "the secret" is part of the disease of alcoholism – and it allows the problems to get worse. As with any disease, it's still possible to love a parent with alcoholism while recognizing the problems that he or she has. And it's not disloyal to seek help in dealing with the problems your parent's drinking create for you. In fact, taking care of yourself is what your dad or mom would want you to do if he or she could think about it clearly!

Find a safe environment. If you find yourself avoiding your house as much as possible, or if you're thinking about running away, consider whether you feel in danger at home. If you feel that the situation at home is becoming dangerous, you can call the National Domestic Violence Hotline at (800) 799-SAFE. And never hesitate to dial 911 if you think you or another family member is in immediate danger. Because alcoholism is a disease and not a behavior, chances are that you won't be able to change your parent's actions. But you can show your love and support – and, above all, take care of yourself.





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Want to banish your pale skin in favor of a savage tan? Join the club. Especially when summer looms, many people start considering the best way to get that sun-bronzed glow — turning to self-tanners, tanning booths, a stretch in the sun, or a combination of these.

To lots of people, summer means hanging out at the pool or the beach, soaking up rays and baking in the sun in pursuit of the perfect golden tan. Indeed, most Americans, including up to 80% of people under age 25, think they look better with a tan.

But before you don your bathing suit and head to the pool — or into a tanning booth — spend a few minutes finding out about your skin and sun exposure. These facts can help you get the look you want without stressing your skin.

How Tanning Happens

The sun's rays contain two types of ultraviolet radiation that reach your skin: UVA and UVB. UVB radiation burns the upper layers of skin (the epidermis), causing sunburns.

UVA radiation is what makes people tan. UVA rays penetrate to the lower layers of the epidermis, where they trigger cells called melanocytes (pronounced: mel-an-oh-sites) to produce melanin. Melanin is the brown pigment that causes tanning.

Melanin is the body's way of protecting skin from burning. Darker-skinned people tan more deeply than lighter-skinned people because their melanocytes produce more melanin. But just because a person doesn't burn does not mean that he or she is also protected against skin cancer and other problems.

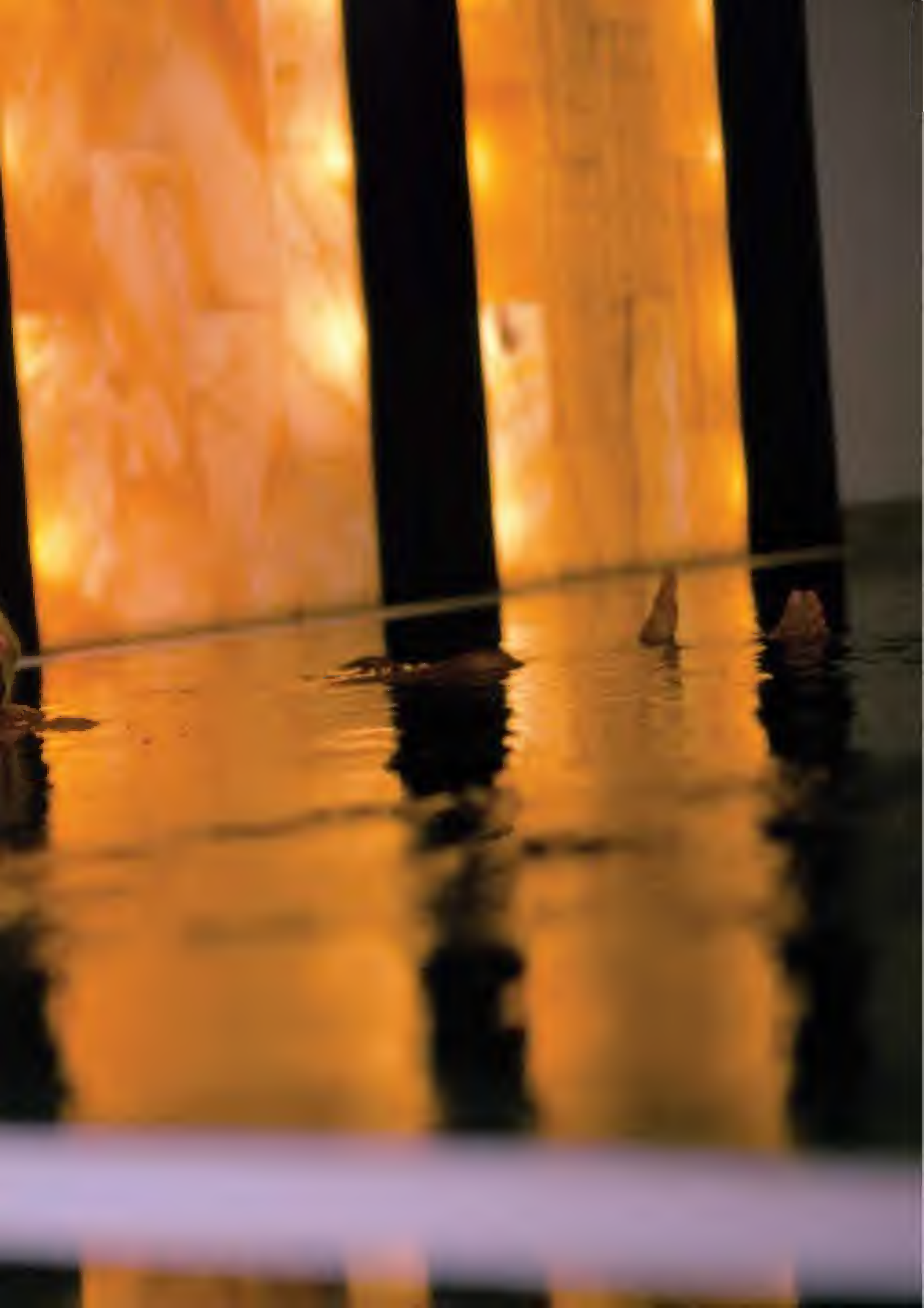
Tanning Downsides

UVA rays may make you tan, but they can also cause serious damage. That's because UVA rays penetrate deeper into the skin than UVB rays. UVA rays can go all the way through the skin's protective epidermis to the dermis, where blood vessels and nerves are found. Because of this, UVA rays may damage a person's immune system, making it harder to fight off diseases and leading to illnesses like melanoma, the most serious (and deadly) type of skin cancer.

Melanoma can kill. If it's not found and treated, it can quickly spread from the skin to the body's other organs.

Skin cancer is epidemic in the United States, with more than 1 million new cases diagnosed annually. Although the numbers of new cases of many other types of cancer are falling or leveling off, the number of new cases of melanoma is growing. In the past, melanoma mostly affected people in their fifties or older, but today dermatologists see patients in their twenties and even late teens with this type of cancer. Experts believe this is partly due to an increase in the use of tanning beds and sun lamps, which have high levels of UVA rays.

Doctors also think that UVB rays play a role in the development of melanoma. That's



because a sunburn or intense sun exposure may increase a person's chances of developing this deadly cancer.

Exposure to UVB rays also increases your risk of getting two other types of skin cancer: basal and squamous cell carcinoma.

The main treatment for skin cancers is excision — cutting the tumors out. Since many basal or squamous cell carcinomas are on the face and neck, surgery to remove them can leave people with facial scars. The scars from surgery to remove melanomas can be anywhere on the body, and they're often large.

Cancer isn't the only problem associated with UV exposure. UVA damage to the dermis is the main factor in premature skin aging. To get a good idea of how sunlight affects the skin, look at your parents' skin and see how different it is from yours. Much of that is due to sun exposure, not the age difference! UV rays can also lead to another problem we associate with old people: the eye problem cataracts.

Sun Smarts

Staying out of the sun altogether may see to be the only logical answer. But who wants to live like a hermit? The key is to enjoy the sun sensibly, finding a balance between sun protection and those great summer activities like beach volleyball and swimming.

Sunscreens or sunblocks, which block the sun's harmful rays, are one of your best defenses against sun damage because they protect you without interfering with your comfort and activity levels.

The SPF number on a sunscreen shows the level of protection it gives. Sunscreens with a higher SPF number provide more defense against the sun's damaging UV rays.

Trauma-free Tans

Even when you're serious about protecting your skin, you may sometimes want the glow of a tan. Luckily, many products on the market — but not sun lamps or tanning beds — will let you tan safely and sun-free.

One safe way to go bronze is with sunless self-tanners. These "tans in a bottle" contain dihydroxyacetone (DHA), which gradually stains the dead cells in your skin's outer layer. The "tan" lasts until these skin cells slough off, so exfoliating or vigorously washing will make the color fade faster. Typically, these "fake bakes" last from several days to a week.

You may have to try a few brands of self-tanner to find one that looks best with your skin tone. Options include sprays, lotions, and towelettes, and they're easy to use. For a subtle, goof-proof glow, try one of the new moisturizers that contain a modest about of fake tanner, letting you gradually build up a little color without blotches and staining — or the smell that some people dislike. All of these options are cheap, too, usually around $10.

Ask a friend to help you apply self-tan to spots you can't reach, like your back, for even results all over. And be sure to wash it off of body areas that normally don't tan — like the palms of your hands and soles of your feet — otherwise, they'll just look dirty.

You might also check out salons that offer airbrush tanning. Airbrush tans may look more like a natural tan with more even results. With an airbrush tan, a salon technician will hook up a DHA solution is to a spray compressor, and spray the tan onto you. Your eyes, lips, and nose will be covered to protect them during the process, which takes anywhere from about 5 seconds to 1 minute. A few hours after the application, you'll start noticing your new, safe tan.

With both self-tanners and airbrush tanning, you'll get better results if you exfoliate your skin with a scrub brush or loofah before the tanner is applied. This evens your skin tone and removes dead skin cells.

And with both types of sunless tanning, you'll still need to wear sunscreen when you go outdoors to protect you from the sun's rays. Fake tans don't generate melanin production, so they won't protect you against sunburn. But the upside is that you get the warm glow of a tan while you keep your skin beautiful for years to come.